August 1977

Smithsonian

Ready to be either entranced or outraged,
Parisians ride transparent escalators
of controversial Pompidou center (p.20)

The Summer of

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August 1977

Smithsonian

Volume 8, Number 5

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*Based on EPA Interior Volume Index measurement, published in the official 1977 EPA Guide 2nd Edition.

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people than 25 other cars you could buy (including Monza, Mustang II, Pinto, Toyota Celica, and Datsun B-210). And more room for luggage than 53 other cars. (Would you believe, with the rear seat folded down it can hold 21 bags of groceries. And with the seat folded up it still has more trunk space than a Cadillac Seville.)

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**Fortune, May 1977.

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The view from the castle

A splendid book about Chesapeake Bay and one of its denizens, the blue crab, points toward the uncertain future of both

". . . a faire Bay compassed but for the mouth with fruitful and delightsome land. Within is a country that may have the prerogative over the most pleasant places of Europe, Asia, Africa or America, for large and pleasant navigable rivers. Heaven and earth never agreed better to frame a place for man's habitation."

This appealing description of Chesapeake Bay by its early 17th-century discoverer, Captain John Smith, comes near the beginning of William W. Warner's fascinating book, *Beautiful Swimmers,* the Pulitzer Prize-winning saga of watermen, crabs and the Bay. Warner was the Smithsonian's able Assistant Secretary for Public Service, but I had no idea that he was also a born writer (and a born naturalist into the bargain) until he requested a sabbatical to do a book. Do a book? But on what?

"Oh, fishing," was the reply. Although I am not a fisherman, I knew that Chesapeake Bay was famous for bluefish, striped bass and oysters. But no; it was crabs that William was out for.

Things being what they are in Washington, I lost sight of William Warner for a year. When I did catch up with him, he asked me to read a chapter that he had been adapting for this magazine (February 1976), and I suddenly found it absorbing reading. From there I plunged into the full proofs of *Beautiful Swimmers,* and I realized that he had set forth the whole spectrum of the Bay and its life as vividly as had any great writer of the sea I could recall. In addition, he had given a complete account of the natural history of the Atlantic blue crab and had made these details wholly readable.

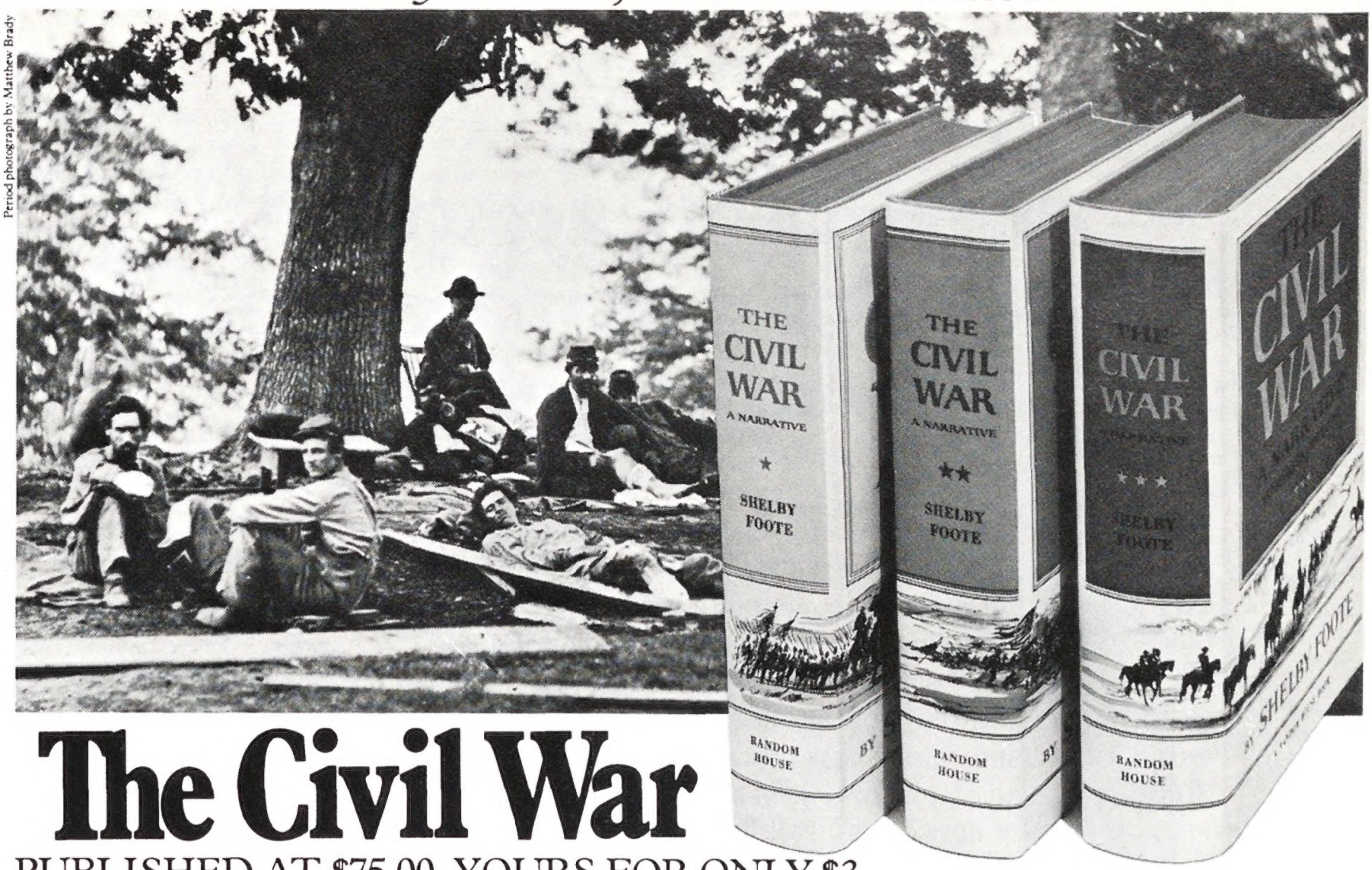
Warner describes the rituals of the life cycle in shallow water and deep, for the Bay is beautifully designed to shelter male or female crabs, young or old, at every stage of their lives. It is an enthralling account sociologically as well as biologically—the interplay between a creature in great demand as human food, and the men who still hunt it in ways that have hardly changed in a hundred years, except for the addition to their boats of an engine and a few more recent gadgets such as automatic depth finders.

And what of the future? "I sometimes have the feeling," says one of the watermen, "that we're going to be another Lake Erie." They know what is wrong. It is not so much the enormous Calvert Cliffs atomic energy plant sucking in bottom-dwelling plankton, eggs and larvae, or the constant proposals to dredge new or deeper ship channels, or the proposed oil refinery at Norfolk, which will be dangerously close to the Bay's blue crab nursery. "These things are bad enough," writes Warner. ". . . The real problem is something harder to pinpoint. As [the watermen] go out year after year, the water seems to be changing. It may be, they think, that it is everywhere getting a little tired. Each summer there are more fish kills and in winter you can sometimes see strange little red dots suspended in the water. Old, tired and a little messy, you could even say. Age is coming to the Bay, too, perhaps. Simple as that."

And so it goes. Our second Pulitzer Prize in three years (Daniel J. Boorstin's *The Americans: The Democratic Experience* was the first). The book is a wonder, and the Smithsonian's pride.

S. Dillon Ripley

100 years later, the wounds still bleed.



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—Volume I, Fort Sumter to Perryville.

Here the great Stonewall Jackson, accidentally wounded at Chancellorsville, gives his last orders:

He left the sentence unfinished, seeming thus to have put the war behind him; for he smiled as he spoke his last words... "Let us cross the river," he said, "and rest under the shade of the trees."
—Volume II, Fredericksburg to Meridan.

And here a nameless foot soldier defies an order, during the Confederate retreat from Nashville:

"You go to hell—I've been there," the man replied, and kept on trudging southward in the rain. None among them had any way of knowing that the war's last great battle had been fought. All they knew was they wanted no more of it...
—Volume III, Red River to Appomattox.

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IBM Reports

Information: a resource that's helping us manage our other resources better.

World population is increasing at more than 200,000 every day. It is expected to double in the next 35 years. Where will the additional food come from? What of the other resources needed to sustain economic growth and provide a better life for the individual on this shrinking planet?

The supply of many of our resources is finite, and our rate of use, alarming. For example, consumption of mineral resources has been soaring throughout the world. This country alone has consumed more minerals and mineral fuels in the last 30 years than all of mankind used in all previous history.

Finding new deposits of these finite resources—and, where possible, developing alternate sources—must obviously go hand in hand with more careful management of what we consume. Supplies of replenishable resources—food, fibers, timber—can fortunately be expanded by human effort, but the required scale of increase poses an awesome challenge.

Most critical of all, the sustaining resources of life itself—air, water and land—must be protected from mounting dangers in our ever more crowded, more industrialized world.

In the struggle to manage our resources more effectively, information is proving to be an immensely valuable ally. Thanks to rapidly advancing information technology, it has become a vital resource in its own right.

Information is the essence of IBM's business: providing products to record it, process it, communicate it, store it, and retrieve it.

Computers are being used in the effort to locate new sources of oil, gas and minerals. They are being used to explore ways to apply solar and geothermal energy, to maximize hydroelectric power output and to reduce energy consumption in buildings without sacrificing comfort or safety.

Computers are processing information about soil chemistry, climate, pest resistance and plant genetics—helping in the campaign to produce more abundant food crops. They are aiding in smog control, investigating ozone depletion, contributing to improved water purification.

There are many other examples. All, like these, have been made possible by innovation in information technology.

Clearly, better management through modern information technology is only part of the solution to our resource problems. But it is an important part.

IBM will continue to advance technology in many areas to develop better ways to help people use the vital and productive resource called information.

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Letters to the Editor

Nautilus

Dear Sir: I enjoyed Douglas Faulkner's beautiful article on the nautilus in the June issue, but I did not find any reference to the size of the animal and could not establish a scale from the photographs.
Avery Wood jr.
Greenville, South Carolina
Nautilus vary in size from 10 to 12 inches in diameter. They are crudely circular animals and measure 12 to 15 inches from the back of the shell to the tip of the tentacles. Ed.

Dear Sir: Your article states that the nautilus is found only in the Pacific today, but my wife, a shell collector, found one at Key Biscayne, Florida, in 1962. The animal was still alive and the shell was undamaged, white and beautiful.
Pieter van den Berg
New Rochelle, New York
The author believes the nautilus your wife found is a paper nautilus. It is a type of octopus and only the female forms the shell on her back, which is an egg case that later detaches. Unlike the true nautilus shell, it is not chambered. Ed.

Carousel

Dear Sir: In Smithsonian highlights, you mention "Winkie," one of the horses on the carousel. How did Winkie get its name, and who was the manufacturer of the carousel?
Mrs. Beverly Grube
Carmichael, California
"Winkie" was named by a carousel operator, Elliott Stringer, who says every time the horse goes round it seems to be winking at him. The 55-year-old carousel, manufactured by the Herschell-Spillman Company of North Tonawanda, New York, was an attraction at an amusement park in Slippery Rock, Pennsylvania, before it came to the Mall in 1967. Ed.

Winkie isn't really winking, but he may intend a horse laugh.

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Britain's National Theatre

Dear Sir: The nearly nude picture of Prunella Gee in *Illuminatus* at Britain's National Theatre is offensive. This commercial trivialization of human sexuality seems to be constantly before us as far as the media are concerned. I had hoped your publication would not follow others' degrading example.

Colonel M. H. Flinter, Ret.
Casselberry, Florida

We were trying to show as many aspects of the new National Theatre as possible, and this play was one of them. SMITHSONIAN *publishes nudes that are part of art exhibits and sees no reason why a semi-nude from another type of cultural center should be excluded.* Ed.

DNA

Dear Sir: In Janet L. Hopson's article, "Recombinant lab for DNA and my 95 days in it," I consider that there were two factual misrepresentations. First, it is not true that the visiting scientist in the P1 laboratory was working with a disease-causing bacterial strain. In fact, it had been experimentally demonstrated that in this case it could not cause any pathological response. Secondly, it was reported that our P3 laboratory was shut down by the campus Biosafety Committee. In fact, the laboratory was at the last stage of being equipped before the committee was to give official approval for the room to be used as a P3 facility. A preliminary look at the facility by several committee members brought the specific comments that the packing material from the recently installed equipment be removed and a special lock be installed on the door before the committee would approve the lab. These requests were met and the lab was approved for P3 experiments. Prior to this the facility had not been used for P3 experimentation.

While it is true in theory that the National Institutes of Health guidelines are extensively criticized (by both sides of the controversy), in practice they are followed seriously. Unfortunately, the article gave the impression this was not the case.

Herbert W. Boyer
Professor of Biochemistry
University of California
San Francisco

Dr. David W. Martin jr., chairman of the

Biosafety Committee, registered complaints similar to those of Dr. Boyer. The author, Janet L. Hopson, responded as follows: Several researchers disagree with Dr. Boyer on his first point, and were quoted verbatim in the article. On the second point, two researchers stated that a third scientist had been using the P3 lab for his cloning experiments—the presence of packing materials and the absence of a suitable lock notwithstanding. He had left the lab in a potentially hazardous state, they reported, and a tour of the facility supported this judgment. The laboratory workers were not in violation of the NIH guidelines, but, in practice, many of their actions were outside the preferred and encouraged NIH standards. I submitted my manuscript to one of Dr. Boyer's postdoctoral researchers for his careful scrutiny. The SMITHSONIAN *staff checked the article again, and a distinguished scientist at NIH checked it a third time in final form before publication.* Ed.

The Trustees of Reservations

Dear Sir: Frederick John Pratson's claim that the Massachusetts' Trustees of Reservations is the nation's oldest independent preservation group is unfounded. The Association for the Preservation of Virginia Antiquities was founded in 1889, two years prior to the Trustees. The APVA was formed with the immediate goal of saving Jamestown Island. Other properties of national significance owned or administered by the APVA include the John Marshall House, the Mary Washington House, Bacon's Castle and Scotchtown (the home of Patrick Henry). In all, the APVA owns some 50 historic properties, and it quietly continues its preservation programs through gifts and purchase. The organization moves with the times—it acquired its first male president in this decade.

Calder Loth
Senior Architectural Historian
Virginia Historic Landmarks Commission
Richmond, Virginia

The title of "oldest independent preservation group" rests safely with The Trustees because of its primary interest in (to use Founder Charles Eliot's words) "bits of scenery which possess uncommon beauty . . . refreshing power." It was the first group to be concerned with preservation of land for land's sake, as opposed to

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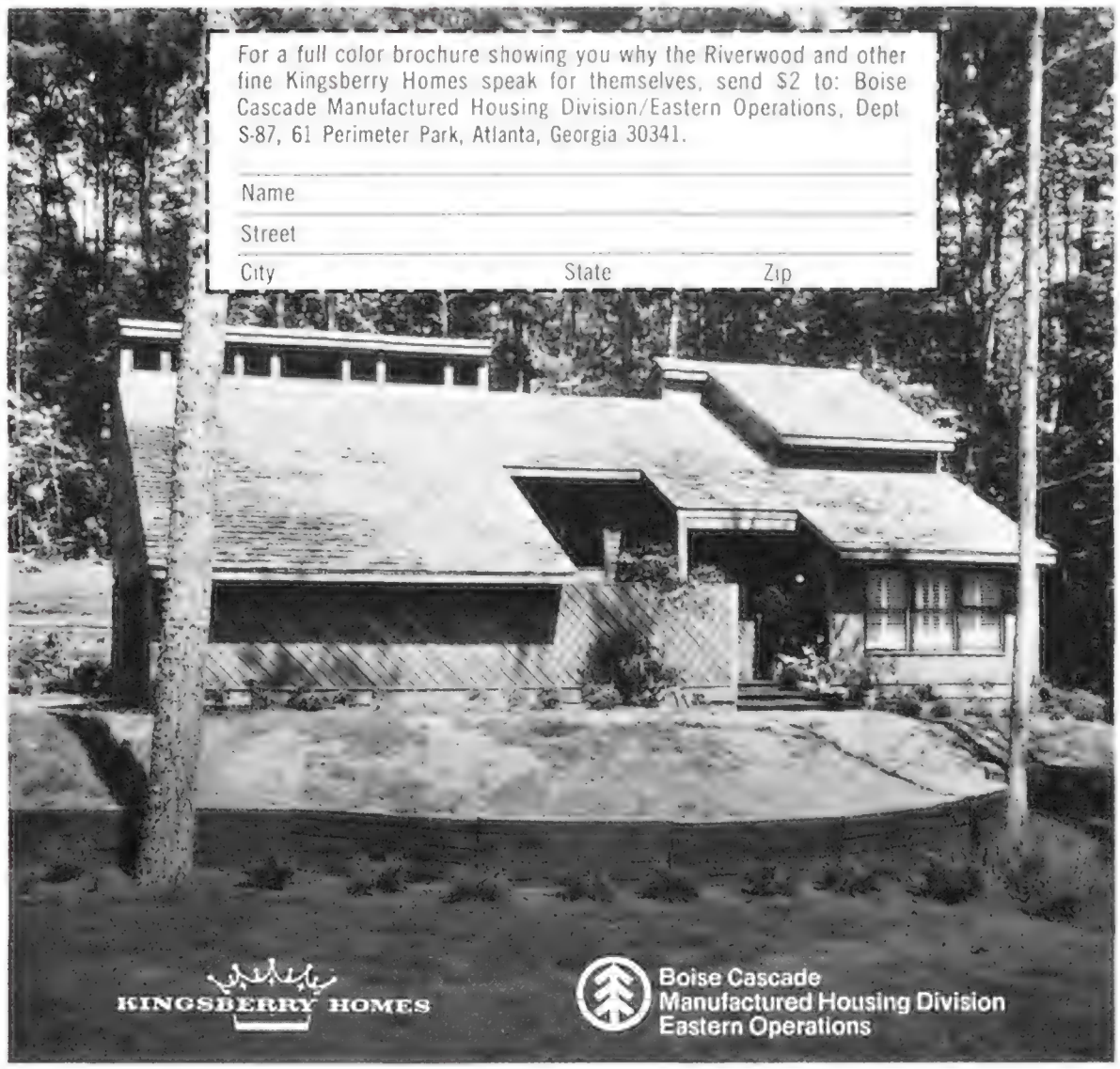
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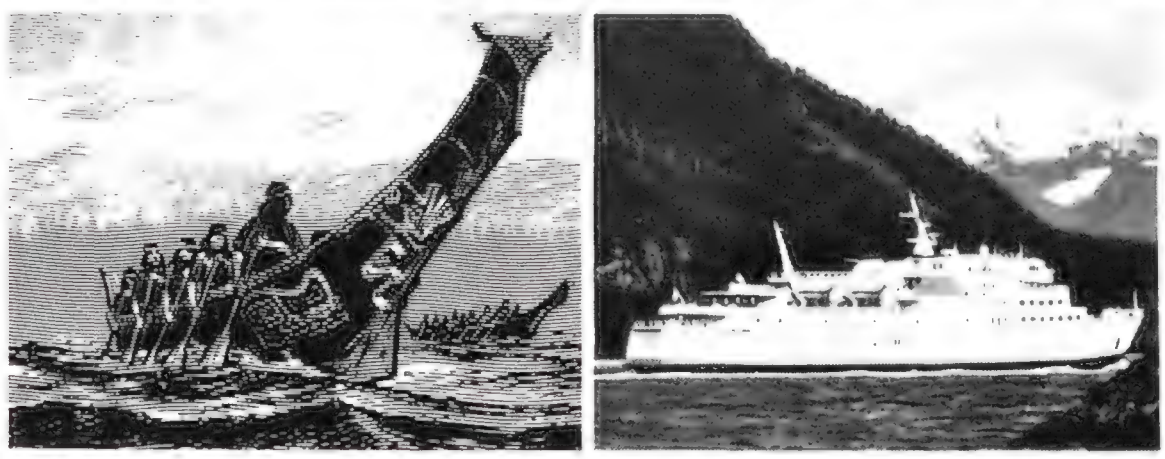

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landmarks or antiquities. Had we been discussing the latter, Virginia would indeed have had a two-year jump on Massachusetts. Ed.

The Burke Japanese collection

Dear Sir: The article on the Burke collection of Japanese art, by Miyeko Murase, is a delightful little education in Japanese art, which I greatly enjoyed. However, I am much confused with the author's statement that the *Tale of Genji* is the world's first true novel. I still like to relax with my copy (English translation from the Greek) of *Ethiopica, The Story of Theagenes and Charicleia* by Heliodorus of the Phoenician city called Emessa. I have always thought this to be the earliest, or one of the earliest, true romantic novels left to us today.

James H. Rives
Chattanooga

Japanese scholars claim that the Tale of Genji, *probably completed in* A.D. *1008, is the first* true *novel. However, Greek scholars maintain that Hellenistic "romances" were indeed novels.* Ethiopica, *written in the third century, was among the first and considered the best example of the romances. The issue comes down to a definition, not agreed upon by scholars, on whether romances are novels.* Ed.

Dear Sir: I thought it might be of interest for those concerned with Oriental art to know that Mrs. Burke's home is now owned by the Minnesota Historical Society and is open to the public. Mrs. Burke donated the home to the Historical Society in 1968. It is located at 432 Summit Avenue in St. Paul.

John D. Burton
Mankato, Minnesota

Old West Virginia trunks

Dear Sir: In your article, "Historical goodies crammed in old camelback trunks" the West Virginia Stomper Doll you referred to is a copyrighted, trademarked property of the Yesteryear Toy Company, Inc.

Terence D. Barron
President, Yesteryear Toy Company, Inc.
Charleston, West Virginia

The Stomper Doll, which we should have capitalized, is similar to other traditional West Virginia toys generically known as "limberjack" and "dancing man." Ed.

Phenomena, comment and notes

Dear Sir: I found Michael Harner's hypothesis, as reported in "Phenomena, comment and notes," intriguing but implausible.

While one can scarcely argue against the abundant evidence of the practice of cannibalism in the ancient Aztec empire, the suggestion that this unusual culinary propensity provided a significant source of essential animal amino acids seems to be in direct conflict with the figures cited. If human flesh were reserved for the elite, priests and politicians, one might assert that it was a staple for this group, but not for the population as a whole. However, Mr. Harner implies that the practice was extended deliberately to include the "ravenous city folk."

Cannibalistic societies have arisen at numerous points throughout Man's social evolution, but the act of cannibalism has almost always been a ritualistic affair, more religion than nutriment. Indeed, the fact that most of the Aztec victims were sacrificed by priests, upon an altar, atop a temple, in a religious ceremony, suggests that, as in other cannibal societies, the nutritional aspects of the occasion were secondary to the religious ritual.

If the ancient Aztec civilization did, in fact, "feed on itself," as Harner suggests, it will be necesary for anthropologists and scientific historians to add yet another accomplishment to the long list of aboriginal Central American achievements: the creation of a nutritional "perpetual motion machine." This feat should prove exciting to students of thermodynamics, as well as to anthropologists.

Daniel B. Matlock
Monmouth, Oregon

Around the Mall and beyond

Dear Sir: I was disappointed that Edwards Park, who observed a squirrel negotiating ivy and outcropping, in his usual detailed manner, considers the activity of jogging "dull to watch." Are there no girl joggers in Washington? Has he seen only the likes of Dr. Herbert Boyer in your DNA article? Placing a girl jogger in front of Park's imagined Marine Corps major would reduce the time of mail delivery from the Freer to the National Gallery from 12 to 6 minutes.

Robert M. Piwarzyk
Long Beach, California

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Name a foreign steel producer. We'll get in the commercial ring with him and battle it out for America's steel market. And if we both fight by the same rules, we're confident we'll hold our own.

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We're looking for a fight, yes. But a *fair* fight, where all opponents in the international arena are bound by the same rules. Bethlehem Steel and the American steel industry are *not* "protectionist." We are *not* looking for permanent trade barriers against foreign steel coming into our home markets. All we're asking is a chance to compete on fair and equal terms here in our own country.

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We urge the U.S. Government to insist on fair trading practices in steel, especially that steel imports be priced to at least cover their full costs of production and sale...to arrange for prompt temporary relief from the current excessive flow of steel imports... and to press for international governmental negotiations leading to an effective international agreement on steel trade.

If you agree with us about the seriousness of this problem, please write your representatives in Washington and tell them so.

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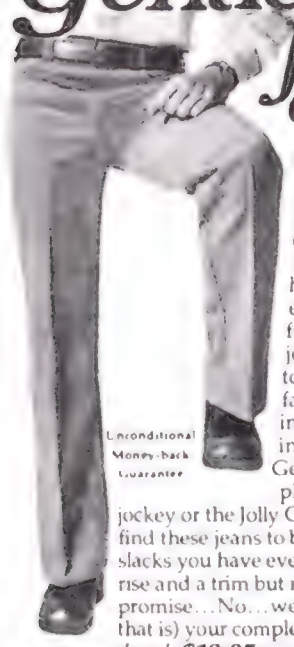

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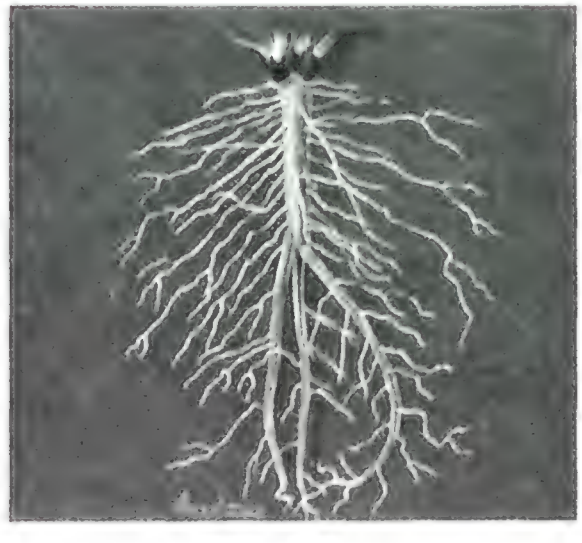
Phenomena, comment and notes

Nuclear plants seem to be generating as much confusion as electricity, and the dandelion as a true monster

Dandelions, as every right-thinking person knows, are a damned scourge. Tenacious plants with horrible, long taproots that insolently resist attempts at removal, they revel in promiscuous population explosions throughout the summer months, turning the green, grassy hopes of spring into a vexatious, Sisyphean nightmare.

It is said that some among us eat young dandelion leaves as part of our salad (SMITHSONIAN, August 1970). Perhaps. But there are also people in this world who will eat anything.

An even more depressing concept of this depressing flora arises from a no doubt innocent communication to *The American Naturalist* (Volume 111, Number 979) in which Daniel H. Janzen of the University of Pennsylvania asks the question: What is a dandelion? What this fugitive from the day-to-day wars of the



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The Government will decide who gets what.

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And, most importantly, how much will be left for your beneficiaries.

Fortunately, with planning, there are ways to protect your estate.

Protect your assets.

First, figure out what you're worth. The house, the car, savings, stock, furniture—it adds up quickly.

Make a will. A will is important to everyone.

Consult an attorney and your insurance agent. They can determine ways to minimize estate and inheritance taxes.

Shelter your insurance.

Consider naming alternate beneficiaries. Insurance proceeds paid to named individuals are not subject to claims of your creditors; insurance payable to your estate is.

Talk to your agent and find out how life insurance proceeds can still be given certain tax advantages.

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Your agent can help you determine how much income your family would receive without you.

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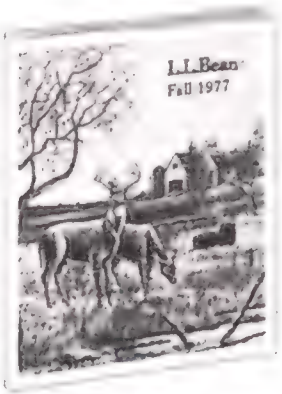

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lawn is driving at is a definition of an organism that will render more elegant the insights and theorems of current evolutionary biology.

A dandelion, he suggests, is a plant that exploits particular resources, just as bears or persons do. The resources exploited are six square-inch plots of mud, than which Dr. Janzen has "trouble thinking of a more monotonous resource." (Dandelions, one may think, *should* be bored.)

But our fugitive's point is that each dandelion—leaves, flowers, seeds and so forth—should be thought of as individual florescence of a single "evolutionary individual" (EI) which possesses your lawn in the aggregate, exploiting every momentary appearance of its resource (that is, a lack of grass in six square inches) without ever dying off even as a hapless lawnmaker removes bushels of dandelion tops.

Stated in other terms, the dandelion population in your lawn and that of your neighbors is in fact "a very large tree with no investment in trunk, major branches, or perennial roots." It is thus virtually unkillable, spreading its survival-searching efforts over the landscape with the lowest possible biological investment, living on for millennia in spite of your best efforts and those of generations to come.

What's going on?

Recently a high official in the Carter Administration suggested privately a new approach to the energy problems of the United States: lower the cost of gasoline to five cents a gallon and provide each buyer of a gas-guzzling, multi-ton automobile with a significant rebate. In this way, we would use up all the petroleum resources earlier rather than later, and then when everyone really understood that the party was over—our cars rusting sculptures amid our overgrown, dandelion-filled lawns—we could all set about solving the problem.

The point—that most people aren't aware of the pickle we're in (or if they are they don't care)—may be accurate. Or it may be more true to say that high government officials want to put the blame on some other goat—in this case the American public.

The latter view is borne out by a not-much-publicized poll by Louis Harris which will warm the hearts of those who have long questioned the big-is-better assumptions of our present-day civilization.

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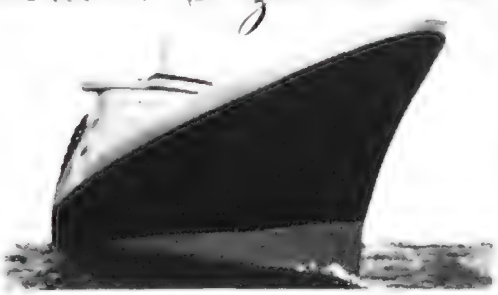
Queen Elizabeth 2



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Mr. Harris found that in pluralities on the order of four to one, Americans see a need to concentrate on basic essentials, rather than higher standards of living; to seek fulfillment from "nonmaterial experiences"; to improve current modes of travel rather than develop faster ones.

Against that backdrop, it is of more than whimsical curiosity to tune in to the current statements in the journals of science about nuclear energy.

In *Chemical & Engineering News,* (Volume 55, Number 20), we overhear the vice chairman of Commonwealth Edison reporting that it costs him 14.2 mills per kilowatt hour of nuclear-generated electricity as opposed to 18 mills for coal-generated electricity. Average capital costs for nukes were $205 per kilowatt-hour and $225 for coal plants. So much, then, for the rumors that nuclear power is too expensive—except that Commonwealth Edison sees a need for federal subsidies or some other *deus ex machina* to handle the disposal of wastes if the spent fuel is not reprocessed.

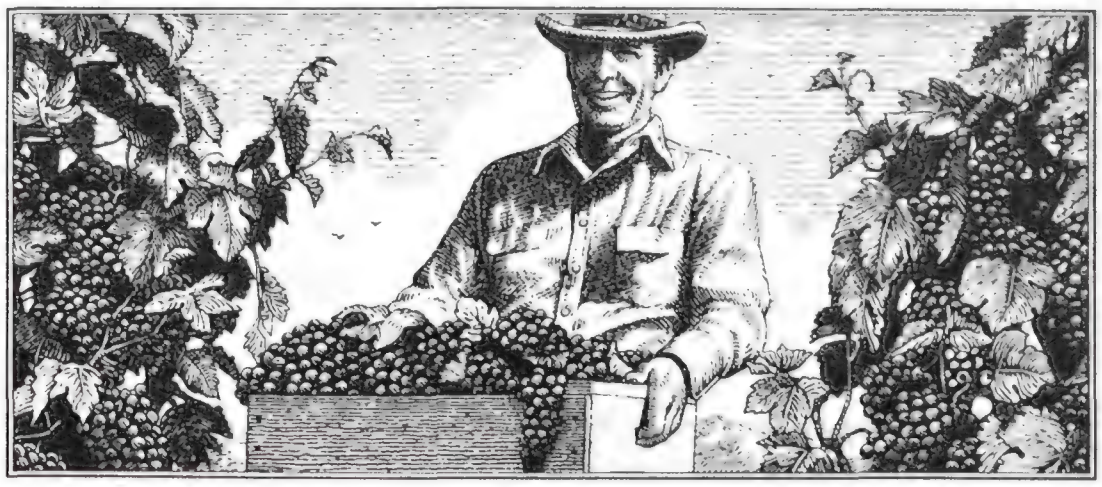
Elsewhere in the same issue, an invited editorial by the Center for Science in the Public Interest talks about safety in the nuclear business. CSPI points out that the industry's safety record is by no means as flawless as its proponents have advertised. CSPI points to:

- 10,000 disabling injuries at nuclear facilities in 33 years, including 300 deaths;
- 150 threats against nuclear facilities in seven years, including three cases where bombs were successfully planted;
- 100 pounds of uranium and 60 pounds of plutonium lost (or stolen) each year;
- 26 occasions in only three decades when nuclear power systems have gone, at least temporarily, out of control.

Regardless of such criticism, the uranium business, after years of sluggishness, is beginning to see buils in the shapes of the clouds on the horizon. *Chemical & Engineering News* reports the following week (Number 21) that spot prices are up almost 700 percent, although long-term contract prices have only doubled. Demand is seen to be increasing, thanks to an administration commitment to rather high levels of nuclear power.

Turning to *Technology Review* (Volume 79, Number 6) one is reminded of another complexity in the nuclear situation—the reprocessing of nuclear fuel, that matter

The importance of timely harvesting to fine wines.



One of the most important times of the year for any winery is the harvest.

In order to make the best possible wine, we want to crush our grapes only at the very peak of their maturity. Experience, of course, tells us approximately when each varietal grape will reach that point, but it is important that we know precisely when the grapes will reach that critical point of maturity.

Field Tests

In order to determine that time, about three weeks before estimated maturity, our field men start to take samples of grapes from the vineyards for testing.

From representative rows of vines, about 200 individual grapes are collected. They are taken from both sides of the row—from the top of the vines, from the bottom, and from both the inside and the outside.

These individual grapes together make up one sample which our field man "juices" on the spot.

He then makes his own sugar test of the juice, puts it in a cold box and sends it to our laboratory for more exact sugar testing, plus acid and pH analyses.

Laboratory Analyses

Some wineries test only in the field, but we feel this is too crucial a time in the making of fine wines to not follow through with as much care as possible.

These on-going analyses are each presented to meetings of the winemaker and the field man for their judgments. They pinpoint the exact time of maturity—that important moment when the complex flavor characteristics of the grape are at their peak.

The Harvest Itself

From the results of these tests, our field men then schedule deliveries from our growers. Because of varying types of soil within a given vineyard certain areas may mature earlier. If the vineyard is a large one, these areas are picked first.

Usually an entire varietal crop is picked within a one to two week period, allowing for differing times of maturity.

Since we believe that, in order to capture the crop's optimum quality, grapes should be crushed within four hours after picking, all our grapes are scheduled for delivery to the winery within three hours of picking.

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This is typical of all our efforts to make fine wines. We can never do, or care, too much.

In fact, everyone at the Gallo Vineyards adheres to the credo that has always been our guide: our aim in winemaking is to bring you the finest, highest quality wines our skills can possibly produce.

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for which Commonwealth Edison's vice chairman quietly called for extra-industrial help. Spent fuel from nuclear reactors is the big issue in the international proliferation flap: reprocessed by current methods, a reactor's fuel provides fissionable uranium and plutonium—the stuff of bombs. *Technology Review* remarks on several other ways of reprocessing fuel now under investigation—ways which would yield the uranium and plutonium in forms very difficult to divert into weapons production. It all seems pretty academic, however, since at present there is *no* commercial nuclear fuel reprocessing being done in the United States.

This leaves the spent—but radioactively hot—fuel from the nation's reactors piling up, in need of disposal sites. And *Technology Review* quotes geologists on what to do about all the waste. Burial in salt deposits seems, under certain circumstances, the best bet but, these nuclear garbagemen point out, not every country has the right kind of geological conditions for burying wastes. So, will this or some other country take over the burden of being the global graveyard?

Yet another form of nuclear waste has begun to receive some attention: the nuclear plant itself. The useful life of a nuclear plant is, on the average, 40 years. But the Atomic Industrial Forum has determined that a century would have to pass before certain radioactive materials decayed sufficiently to permit economical direct dismantling.

For 100 years then, an old nuclear plant would have to be mothballed with a permanent guard force, or "entombed" by welding shut the entrances and sealing the building with concrete. The cost of this, plus dismantling a century later, is estimated at about $13 million in today's dollars or two percent of the plant's construction cost.

And so, as the innocent layman listens to the incessant chatter about nuclear power —it's good, it's bad; it's cheap, it's expensive; it's needed, it's not—he is left with a question from a *New Yorker* cartoon by Booth that showed an old curmudgeon in his easy chair rattling the paper and barking at his dog: "I'd just like to know what in hell is happening, that's all! I'd like to know what in hell is happening! Do *you* know what in hell is happening?"

—James K. Page Jr.

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One last point. If you're in London with an afternoon to spare, we invite you to browse through our Gallery at No. 5 Royal Arcade, London W1. There are restaurant and bar facilities for members nearby that can enhance the experience, indeed.

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By Rudolph Chelminski

Exoskeletal art container is the rage, literally, and the delight of Paris

Controversial it may be, ardently acclaimed and derisively scorned, but France's new national Pompidou center is clearly stunning

Photographs by Dmitri Kessel

Rue Renard side of the behemoth of Beaubourg—pipes are blue for air conditioning, green for water, the red means elevators, and so on, just as on an engineering drawing—functional and obvious.

The need for rulers throughout history to erect architectural records of their reigns is common enough to suggest that it is so natural a feeling that—given the chance—even ordinary people might do the same. After all, every man's home, so to speak, is his castle. Still, the world is full of the remarkable residue of royalty (never mind the lives of the men who actually built the buildings and paid for them—think of working on the pyramids, for example, or meeting the demands of the royal tax collector), and in any order of precedence Paris would have to rank high.

The Louvre, for instance, began as a kind of blockhouse in the early 13th century under Philippe Auguste, was done over under François I in the 16th century and has been undergoing alterations more or less ever since. Henry IV completed the Pont-Neuf, that gem which sounds like a song and looks like one; planned the Place des Vosges; and founded the Hôpital Saint-Louis. Louis XIV built the Observatoire, the Place Vendôme, the Hôtel des Invalides and, just beyond the city, Versailles (SMITHSONIAN, March 1977). The next Louis has the Place de la Concorde to his credit; Napoleon, naturally enough, the Arc de Triomphe; Napoleon III the creation of sweeping, leafy avenues and boulevards—in short, the Paris everybody knows.

The Third Republic managed without kings but it created much of what is known around the world today as Parisian: the Belle Époque, the Métro, the Pont Alexandre III, the Sacré-Coeur Basilica, the Grand and Petit Palais, the Eiffel Tower.

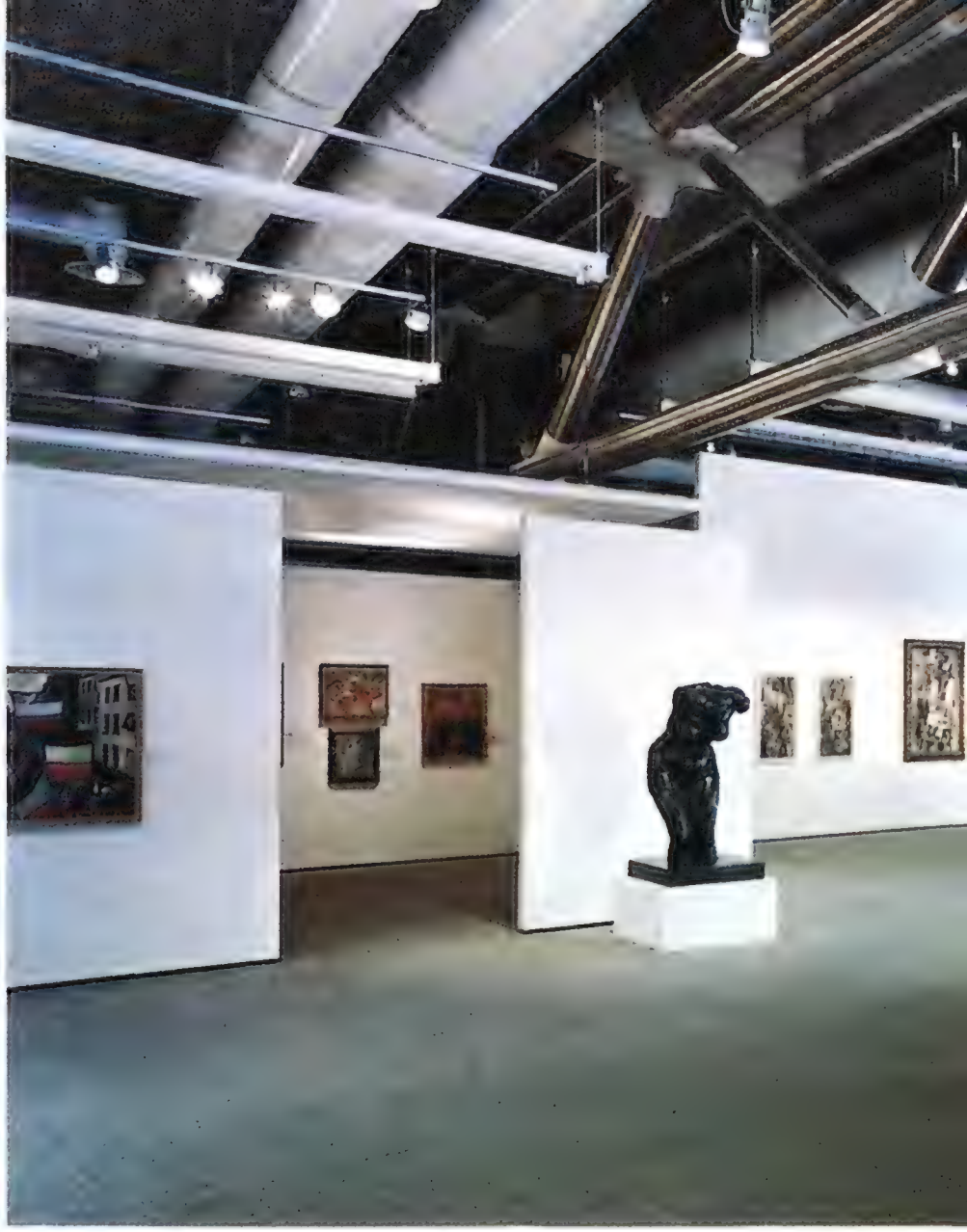
The postwar Fourth Republic hardly had the time

to do anything but catch its breath and change premiers. And then came de Gaulle and Pompidou.

Both men were obsessed with restoring France's dignity and carrying her to a dominant position of wealth and authority. Their instrument would be *le progrès,* and Paris would be its reflection, a great international center of trade and industry. To achieve this lofty goal, they delivered the City of Light to commerce. For nearly 15 years the bankers, promoters and speculators took over the city, clawed it apart, put it together again, guided by no motive higher than that of profit. Paris went forward into the later 20th century dominated by business. Office buildings replaced apartments, rents rose vertiginously and the workers, tradesmen and artisans were driven out to the suburbs. The gracious skyline became an incoherent jumble of awful modern architecture jutting up over calm island patches of the old.

Pompidou certainly loved his country but seemed indifferent at first to the charms of Paris. He made his private salon in the Élysée Palace into a showplace of hyper-modern decor and declared that "Paris must be adapted to the automobile." He transformed the Right Bank quais of the Seine into an automobile expressway and was on his way to doing the same for the Left Bank when he died. The de Gaulle-Pompidou period was an "assassination," to quote the title of a recent analysis by Louis Chevalier, a professor of history at the Collège de France. The advent of Valéry Giscard d'Estaing to the presidency was a happy turn of events for Paris. He killed the Left Bank expressway project, clamped down on real estate speculation and in general displayed a concern for beauty and humanity in urbanism.

It is altogether fitting that the Right Bank depredation today bears the official title "Voie Express Georges Pompidou." And yet, in spite of that, it is



Delaunay, Braque, Léger, Dufy and Matisse, below exposed ceiling pipes in art gallery.

A section of the center's vast public library, a marvel of technological inventiveness.

now virtually certain that future generations of Parisians will remember Pompidou with gratitude, certainly not for that, but for the Centre National d'Art et de Culture Georges Pompidou, known already as Beaubourg, for that is where it stands. It is one of the most extraordinary cultural enterprises ever undertaken, and certainly the most important in France this century. The mark which Pompidou chose to leave on his capital has already begun to change the orientation of Paris life.

"I would passionately love," Pompidou declared in 1969, a few months after his election to the presidency, "for Paris to have a cultural center that is both a museum and a center of creation, where the plastic arts would be side by side with music, cinema, books and audiovisual research."

It was a visionary thought, but one that also had a sound, practical basis: Paris lagged shamefully behind other Western capitals in providing its citizens with a decent public library; the setup of the Musée d'Art Moderne had never been quite right; Pierre Boulez, France's most famous and prestigious musical master, had exiled himself to the United States to continue his research; and in general the Paris postwar cultural scene had become a shadow of the colossus it had been in the first three decades of the century. One of the intentions behind Pompidou's grand idea was exposed over and over in the French press, in terms resembling the competition in a soccer league: bring the title of Culture Capital of the World back to Paris. (Read: back from New York.)

The site was there, just waiting to be used—a five-acre vacant lot just north of the Seine, called the Plateau Beaubourg. The plateau had been created as part of an urban renewal project about 1930, when a big section of decayed apartment buildings had been razed in anticipation of a rebuilding that never happened. It was a colorful section of town: streets descended from medieval lanes and pathways bearing names that translate to Breakbread Street, Impasse of the Oxen, Passage Molière, Fox Street; modest shops and artisans' stalls; a few small factories and ateliers; the predictably heavy esculent spin-off from the nearby market area of Les Halles; and plenty of prostitutes working in tiny, 18th-century hotels.

Pompidou seized the opportunity and went ahead with his project; otherwise the Plateau Beaubourg today surely would be just another bank headquarters, or a high-priced apartment complex. He called for a design competition, stipulated that it be open and international, and made it clear that, while he hoped

Paris-based author Rudolph Chelminski last wrote about Alika and Scott Lindbergh's studies in primate behavior, SMITHSONIAN, *March 1977.*

The behemoth of Beaubourg

The work, a new acquisition painted on a mirror, is *Woman in Graveyard* by Michelangelo Pistoletto.

the winner would be a French architect, he would abide by the jury's independent vote. No fewer than 681 projects were submitted, from 49 countries, and when the winners were announced (July 1971) they were an Englishman, Richard Rogers, 38, and an Italian, Renzo Piano, 34. "A musical comedy team," sniffed a Paris daily of the pair who called their plan "a cross between an information-oriented, computerized Times Square and the British Museum," but the verdict was in and it was evident from the start that Pompidou and his associates were opting for audacity.

In the drawings and models which were soon exposed, and with the finished structure today, there is nothing to resemble museums elsewhere. The structure, basically a glass box suspended from beams held up by a visible steel scaffolding, looks like a present from Mies van der Rohe that hasn't been unwrapped yet. Everything that is usually hidden inside is on the outside: elevators and escalators, water, sewage and electricity conduits, heating and air conditioning ducts and, of course, the structural supports. It is surprising, baffling, exciting—but undeniably stylish.

A building that makes waves

"Ça va faire crier" (it's going to make for a lot of shouting), predicted Pompidou, and he was right. The ocean liner, Parisians call it, or the Pompidoleum, the refinery, the distillery, the supermarket, the self-service or the culture mill. A lot of this has been good-natured chaffing, but not for everyone.

The project's defenders returned the fire by recalling the shrieks of outrage from the cultural establishment when the Eiffel Tower was erected in 1889. ("Useless and monstrous . . . Tower of Babel . . . Solitary suppository.") It is an apt comparison. Both projects were disconcerting and innovative in their time, and it is a fair bet that Alexandre Gustave Eiffel would be intrigued and charmed by the technical solutions of today's bright young men. The exclusive use of prefabrication makes the building more akin to a boat than to most land-based architecture, but the analogy to bridge-building is even closer. In fact, Beaubourg has been referred to as a six-story bridge, suspended from the scaffolding around it. Inside, since there is no further need for walls or supporting columns, there are vast, unimpeded spaces easily compartmented by temporary partitions. The scaffolding's pipes serve a double purpose and can be filled with water as a reserve for the automatic sprinkler system. On the eastern face, all the technical entrails which are conventionally hidden within modern structures stand out in a gleeful, candid, polychrome display across the entire wall.

Is Rogers and Piano's design intentional or is it

only a happy accident of historical symmetry? Whatever the case, the Centre Pompidou faithfully reflects some construction principles that are more than 800 years old. Only a few blocks to the south, across an arm of the Seine, stands another building, and an even more famous one, which proudly bares its structural supports on the outside: Notre-Dame de Paris. The great cathedral could not stand without its flying buttresses, any more than Beaubourg could without its "scaffolding." And if it can be said today that Beaubourg looks cluttered and complicated when compared to the clean, glassy lines of other modern structures, it could also be pointed out that the earlier, Romanesque church architecture was purer, cleaner and simpler than the wanton complications of the Gothic which followed. Who knows what shock waves and grumblings rose from the breasts of contemporary esthetes when Notre-Dame went up? But it was soon copied throughout Europe—and it is a safe bet that the world of architecture today soon will be seeing many derivations or outright imitations of the Rogers-Piano breakthrough.

Biggest modern art museum

It is certainly big (166 meters long, 60 wide and 42 high) and even garish, but curiously enough it is not nearly as obtrusive as the modern skyscrapers which stand like weeds throughout the city. Scarcely taller than the 17th-, 18th- and 19th-century apartment houses which surround it, Beaubourg sits there like a meteorite that has landed in an old town square. The effect of contrast is quite stunning at night, when Beaubourg is brilliantly lit, shimmering and glassy, in the middle of a decor that looks like a Hollywood movie set of Paris. The old sets off the new, but it also palliates its aggressiveness.

Pompidou's dream building is divided into four basic sections, with several adjuncts. The richest beneficiary in space is the National Museum of Modern Art: some 17,000 square meters over three floors, which make it the biggest modern art museum anywhere, and a considerable improvement over the old one overlooking the Seine near the Palais de Chaillot. Arbitrarily starting in 1905 with the Fauvists, the collection has 1,100 paintings permanently displayed, 600 more ingeniously arranged on suspended panels which visitors may lower from the ceiling by punching buttons, and an untold number in reserve storerooms. Naturally, every great and lesser name of modern art is represented, with the exception—for the time being, at least—of the Rouault and other notable collections willed to the city of Paris. The heirs of these painters contested the transfer across town of paintings which were specifically given for the old museum. Even if

This is Niki de Saint-Phalle's somehow delicate *La Waldaff,* in Beaubourg's permanent collection.

Exhibit presents, left to right, *Paulette d'Aliment Blanc, Canapé, Germination d'un Fauteuil Louis XV.*

On the west side of the building is a sculpture by Bernard Luginbühl, usable as a slide for children.

Beaubourg's pleasant plaza draws strolling visitors and peddlers. The tentlike

Beaubourg *is* the new Museum of Modern Art, the old building (which now reverts to the jurisdiction of the Louvre) still remains the setting of preference for the executors of the estates in question. Beaubourg officials are confident that they will come around. Space is awaiting them, beneath the cluttered maze of apparent pipes and tubing which monopolizes the museum's ceiling and which, many visitors feel, distracts from serene contemplation of the artwork.

The director of Beaubourg's modern art museum, a generative force on the international avant-garde scene, is a burly, gold-bespectacled iconoclast named K. G. Pontus Hulten, 52, a Swede. Hulten, whose name was, inevitably, quickly transliterated to "Pontius Hilton" by acidulous critics whose wit was activated by their instant dislike for the Center, is well-equipped by temperament, experience and knowledge to deal effectively with them.

A former director of the Moderna Museet in Stockholm, he brought American Pop Art to Sweden, and was creator of an exhibition at New York's Museum of Modern Art entitled "The Machine at the End of the Mechanical Age," for which he wrote the catalog as well. Hulten, whose doctoral dissertation was on Vermeer and Spinoza, has made experimental films and was one of the first modern art authorities to advance kinetic art. An all-around arts man, right up-to-date, he suits Beaubourg well, ready to defend it with skillful counterpunches, constantly alert to put the place at the disposal of the people while showing them the range of modern man's visual inventiveness.

Beaubourg's second most important section, only a few hundred square meters less in floor space than the museum, is the Public Information Library on the second and third floors. Astonishingly enough, the capital city of France until now never had a true library of the sort that is so common in any American or English city. The prestigious Bibliothèque Nationale caters only to scholars and professionals, and others, such as the Bibliothèque Sainte-Geneviève, to students. France has not yet surmounted the elitist nature of its cultural habits; Beaubourg is the first serious step in the right direction.

The library is for on-the-spot consultation only and does not lend books. Theft or spontaneous borrowing is discouraged by magnetic tapes within the bindings which set off an alarm when any of the books passes an exit point. Slides, cassettes (40 foreign language courses are offered over earphones), records, magazines and newspapers both full-size and on microfilm,

blue-topped structure (right) is being built as a children's entertainment center.

Across the plaza, trompe-l'oeil painting with woman (right) transforms windowless wall.

and a computerized cataloguing service complement the normal array of encyclopedias, reference books and fiction. Since the library is such a novelty, the local press may be forgiven for its enthusiastic use of an adjective like "prodigious" when describing the million-document collection—roughly the size of those in a number of American cities.

The Centre de Création Industrielle is a new hybrid for France, an offshoot of the Musée des Arts Décoratifs, designed to study and display the whole framework of contemporary life, from architecture to urbanism to industrial design and visual communication. Its large ground-floor exhibition area lies at the base of the glass-tube escalator, a natural point for the visitor to contemplate the mirror of his own civilization: posters, audiovisual presentations and an endlessly renewed selection of industrial artifacts presented according to themes and meant to constitute "a voyage in the present time."

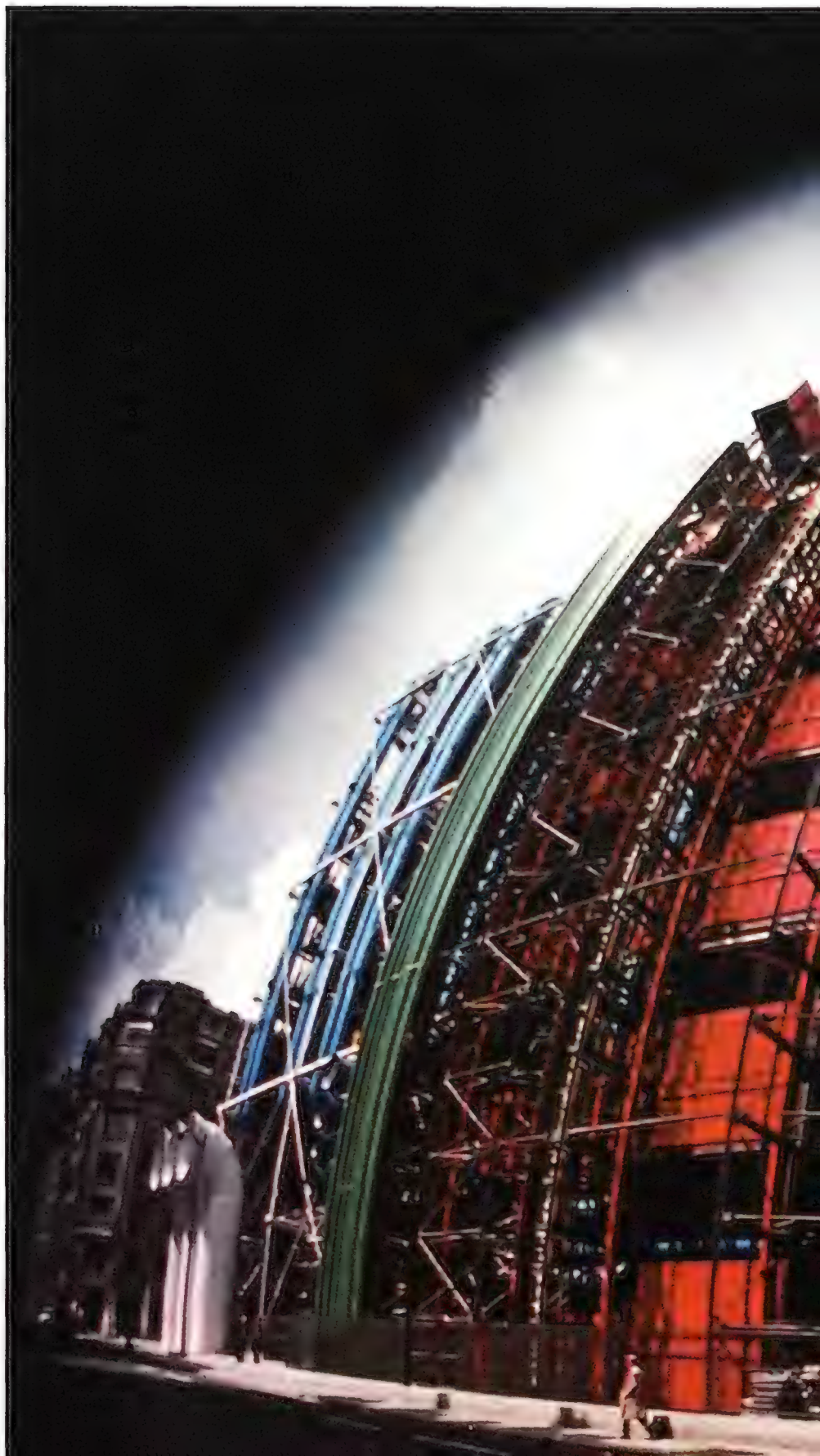
Buried deep underground between the main building and the flamboyant Gothic church of Saint-Merri (where Saint-Saëns was organist) is the ransom France paid Pierre Boulez to return home: the Institut de Recherche et de Coordination Acoustique/Musique. In this silent and secure bunker from which outsiders are barred except for special demonstrations, Boulez will direct a varied and changing team of acousticians, psychoacousticians, sociologists, engineers, computer specialists, linguists, theoreticians and, yes, some instrumentalists as well, in a determined search for new sounds and a new approach to music. It has been an ambitious, even audacious, program dear to his heart for many years. Now he can, well, sound it out. Although it has a 1984 ring to it, Boulez contends that this scientific laboratory methodology is the only intelligent hope of making any musical progress since the complexities of composition at this stage are beyond the abilities of any solitary person to resolve. The factory of Beaubourg thus has its research and development department.

Beyond these four main sections, there is a projection room for the Cinémathèque française on the top floor, a multipurpose concert hall-theater (Boulez will share it with theater groups), a poetry gallery, a children's atelier (initiation to art, etc.), a tent on the mall for children's games, a permanent exhibit of Brancusi's reconstructed atelier, a sculpture-labyrinth by Tinguely called *Le Krokrodrom,* a bar and, of course, a restaurant at the southwestern corner already famous for its smashing view of the Seine and Paris.

In all, counting the breathtakingly expensive equipment for the Boulez laboratory, Beaubourg has cost the state about $200 million. The price tag may seem high to many for a country as relatively small as France, especially in these times of economic difficulty, but even conservative commentators have made the point that the disastrous Concorde supersonic jet program cost 15 to 20 times more to develop. One finished Beaubourg full of Parisians equals the price tag of three Concordes parked on the tarmac at Toulouse. Prime Minister Raymond Barre was recently quoted as saying that foreign visitors judge a country by the quality of its museums. In this perspective Beaubourg appears as a positive bargain. The annual operating budget (around $23 million) has caused a good deal of anguish and rhetoric. France's finances, especially for the fine arts, are limited, and some clear choices had to be made. Pompidou chose to bet heavily on Beaubourg. The result today is that 30 national museums combined, including the Louvre and Versailles (Beaubourg does not qualify as a national museum), have to share a piece of the annual subsidy pie estimated to be less than $20 million.

So Beaubourg has the priority. In case anyone had lingering doubts about the wisdom of the choice, though, they vanished on opening day, last February 1. The Center's staff and optimistic journalists had been predicting up to 10,000 visitors for that day, but by 6:30 in the evening, the counting machine by the escalators had recorded the number 20,900. Parisians lined up around the block under a driving rain for a peep inside the refinery, and they have not stopped pouring in since. Early crowds were averaging 20,000 on Monday, Thursday and Friday, when the Center was open from 3 P.M. until 10 P.M., and 45,000 on Wednesdays and weekends, when the doors opened at 10 A.M. Beaubourg is not only a great success, but it is the biggest success in Paris—bar none. At this rate, it should draw something like ten million visitors this year, compared to 1.8 million for the Louvre.

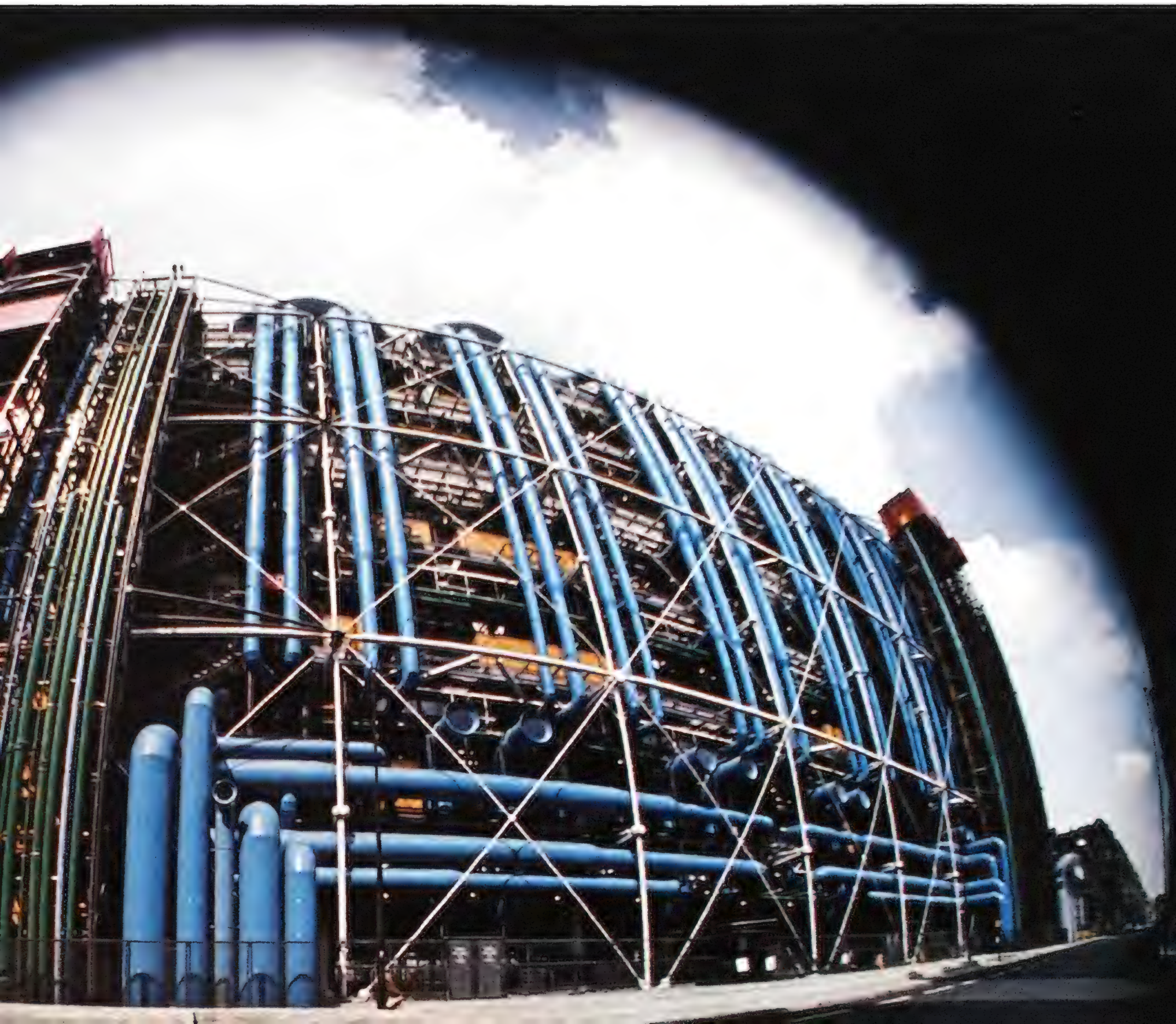
Beaubourg can serve other cities and other generations as an example of urban renewal in the best sense. The building of the Center has already led to the restoration and redecoration of the entire quarter around it. Graceful old facades have been reinforced and cleaned, new restaurants and shops have moved in, pedestrian walks abound and—infallible indi-



A fish-eye lens must be used to give the most complete view possible of Centre National d'Art et de Culture Georges Pompidou.

cator—the whole motley crowd of professional street entertainers, from jugglers to fire-eaters to folk singers to derelicts cadging francs, has elected the mall in front of the culture factory as its hunting grounds. Something like 30 art galleries have moved there from other sections of town, or at least set up branches. The Plateau Beaubourg has already become the new art center of Paris, and is well on its way to becoming, quite simply, the heart of the city.

Saint-Germain-des-Prés is cluttered with cars and hairdressers' salons and boutiques and false English pubs now; Montparnasse is suffering various forms of "modernization"; Montmartre is a parking lot for tourist buses. Beaubourg is the new place—the only place left, really—where strollers can feel the atmosphere of the spiritual festival, the village within a city, which for centuries had been the secret of the charm of Paris. With the completion in a few years of the park and forum on the huge vacant lot a few blocks to the west—the former site of Les Halles—the dynamics of the city will have undergone a complete switch. Beaubourg may well become what the Latin Quarter had always been, ever since Abélard moved off the île de la Cité and founded the University of Paris by teaching his students in the vineyards and hayfields across the river from Notre-Dame. The Right Bank will have become the Left Bank. If Paris is destined to forge ahead again as a seedbed for artistic and intellectual creation, it will surely happen in and around this structure.



By David Sheridan

A second Coal Age promises to slow our dependence on imported oil

America prepares to mine more of its 256 billion tons of known reserves, but will run out of these sooner rather than later

The first coal age began in wood-poor England and Scotland in the latter half of the 18th century and spread from there to the Continent and the United States, providing the fuel for the Industrial Revolution. By 1910 it was supplying 80 percent of our energy. That same year oil and gas surpassed wood as a fuel, and coal began to decline. Unable to compete, bulky, dirty coal petered out by midcentury, providing only 18 percent of our energy.

Now we are embarking on a second coal age, one that will surpass anything seen in the first in terms of tons produced. President Carter wants to double output by 1985, to well over a billion tons a year. Coal cannot solve our energy problems, despite the "Dig We Must" newspaper ads, but it certainly can help.

We paid dearly for the first coal age. In this century alone in the United States, more than 100,000 men lost their lives in coal mines. More than a million were permanently disabled in mine accidents. Even more—no one knows how many—contracted pneumoconiosis (black lung disease) and spent their last years gasping for breath. The federal government now pays black-lung victims $1 billion a year in benefits which may rise to $8 billion by 1980.

The number of people who have died from breathing coal pollution is unknown. Epidemiological studies do show a direct correlation between air pollution, especially sulfur dioxide, and illness and premature death from respiratory ailments such as bronchitis, asthma, emphysema, and lung cancer. Coal-fired power plants emit about 50 percent of the sulfur dioxide in our air. And sulfur dioxide, it seems, paralyzes those tiny, hairlike structures called cilia found in the throat. Under normal conditions, the cilia beat with a motion that propels mucus and waste toward the mouth or stomach. They are the respiratory system's sentries. But when they are incapacitated, particles of dust and other material, possibly with toxic or carcinogenic chemicals adhering to them, pass relatively freely through the throat and nasal passage directly into contact with lung tissue.

Drainage from coal mines has polluted some 6,700 miles of streams in this country with a mixture of sulfuric acid, iron and aluminum salts—a compound sufficiently potent to kill aquatic life and poison wells and, in some cases, to corrode concrete. More than 90 percent of these streams are in Appalachia. Some 470,000 acres of land in the United States have been stripped for coal and never reclaimed—they are called "orphaned lands" in the coal business. Appalachia accounts for 81 percent of them.

These statistics come to life in a description of a strip-mined site by Kentuckian Harry Caudill: "All that is left of what was once a tree-covered, living ridge is a vast mesa where nothing moves except the clouds of dust on dry, windy days, or the sluicing autumn rains that carve new creekbeds across its dead surface. . . . Enormous gullies are cut into the slopes and sheets of soil are carried away from more nearly level surfaces. Streams that had run clear for thousands of years are now mud, 'too thin to plow and too thick to drink.' "

But despite the terrible costs of digging and burning

Sheridan, a Washington free-lance writer, learned about coal as editor of the Ford Foundation's Energy Policy Project.

A U.S. Steel plant near Provo, Utah, darkens the once-clear skies as it burns locally mined coal.

Deep under eastern Kentucky, a miner operates a coal-digging machine.

it, coal does possess one redeeming characteristic—there is a lot of it. That is very important at a time when Americans are consuming natural gas and oil faster than they can find and produce it, and when technical as well as social problems continue to plague nuclear power. Beneath the wooded hills and hollows of Appalachia, the corn- and hayfields in the Midwest, the rolling grasslands of the Northern Great Plains and the arid plateaus and dry creeks of the Southwest lie vast beds of coal. This is an energy resource far richer than the much-heralded oil fields of Alaska or the North Sea. It is more extensive than the huge Persian Gulf oil deposits. Even if the United States were seriously to conserve energy—that is, substantially reduce its energy waste—increased coal production would be necessary. Coal represents 90 percent of the nation's remaining fossil fuel reserves.

How soon all this coal is developed depends largely on the federal government. Industry, and the bankers who will supply the money, are waiting to see what happens to the Clean Air Act now before Congress. If new laws require all coal-burning emissions to be "scrubbed," the low sulfur content of Western coal will no longer be the advantage it now seems. Industry also wants a resolution of the "checkerboard" pattern imposed on coal lands in the last century. The government granted large parcels to railroads along their rights-of-way, but kept alternating sections in federal hands. Mining companies say their equipment is designed for tracts larger than those now owned by railroads, and they cannot be developed unless the intervening federal parcels can be mined, too.

Some 16 billion tons of coal lie under federal land already leased to industry, but very little coal has been produced so far. Fifteen companies, only seven of them coal companies, control 70 percent of the leased land, but have produced coal from only 7 percent of it.

Most energy projections foresee these problems being resolved with the country increasing its reliance on coal energy—particularly for electric power production. President Carter's Energy Plan calls for an increase in coal production of heroic proportions—from 1976's 665 million tons to 1.2 billion in 1985, an unprecedented 535-million-ton increase in nine years. Coal's share of the nation's total energy consumption would rise to 29 percent under this plan.

Before attempting to discern some of the possible ramifications of the second coal age, let us first dispel some lingering misconceptions about coal.

American coal reserves are thought to be so vast that this is one resource which we need not worry about running out of. False. According to the General Accounting Office, if U.S. coal consumption keeps rising at the rate envisioned in the Carter plan, it will exhaust currently known reserves within 74 years. Of course, additional coal will be found in the interim, but the fact remains that coal is a finite resource.

It is often stated that most of the remaining coal reserves in the United States are west of the Mississippi. This is only true, however, if you are talking in terms of its tonnage. Using a more meaningful measure—energy content—we see that Western coal, while more plentiful, contains less energy. About 55 percent of the United States' coal energy, in the ground, lies east of the Mississippi in the old coal-bearing regions.

Another common misconception is that the nation's

Even with automation, increased coal production would create new jobs.

The pristine Kaiparowits Plateau in southern Utah may become the site of a coal gasification plant.

coal reserves are controlled by coal companies. But of the biggest holders of domestic coal reserves, few are independent coal companies—Westmoreland, Utah, North American. Several are oil companies—Continental Oil, Exxon, Occidental Petroleum, Kerr McGee, Gulf, Mobil, Sun, ARCO, Shell, Phillips, Standard. Two of the other biggest are railroads—the Burlington Northern and Union Pacific. The oil companies had sufficient capital and prescience to begin buying up coal properties in the mid-1960s, and they are now in a strong position to profit from the second coal age. The railroads had the good fortune to be given huge tracts of public lands by the government in the 19th century, and some of these turned out to contain extensive coal deposits.

Finally, consumers should not expect coal to be cheap in relation to other energy sources. Back before the world price of oil quadrupled, coal looked like a bargain at $8 a ton. But the price shot right up with oil to about $20 (spot prices actually rose as high as $45), and coal shows every indication of staying attached to the oil-price comet. Even if it does not, rising costs of capital, labor, pollution control, and land reclamation will keep coal and coal-generated electricity prices high.

In addition, states with coal reserves are beginning to grasp the real worth of their energy resources—much as the OPEC nations did with oil. Montana, for instance; now imposes a 20-to-30 percent tax on the dollar value of coal mined in the state. When State Senator Thomas Towe was asked whether this stiff tax would drive coal producers out of the state, he responded: "If this is the case, so be it. But we do not think that it is. The coal is here. You want it badly enough, however, you are going to have to get used to the idea that you must pay all the costs of your operations, direct and indirect. This is neither a punitive nor confiscatory tax. It is merely realistic. Montanans are through subsidizing the mining industry. Now you must pay your way or you cannot mine."

Producers seem to be paying, and there are signs that this tough new mood is spreading to other states such as Colorado, North Dakota and Wyoming. If an old coal state such as West Virginia ever follows Montana's lead, then the price impact could be truly profound. Currently, West Virginia imposes a 3.85 percent tax on the sale of coal mined in the state.

Indians own from 7 to 13 percent of the nation's coal reserves and they too are beginning to reevaluate the value of their holdings. This is particularly true in the case of the Northern Cheyenne, who have five billion tons under their southern Montana reservation. Other tribes with significant coal holdings include the Crow, the Navajo and the Hopi. Indeed, the Hopis were the first Americans to utilize coal—they used it as early as the 11th century to warm their homes and fire pottery. Indian lawyer George Crossland calls these tribes "the American Arabs."

The overriding impact of the second coal age will be to halt the United States' increasing dependence on oil imports. In 1976 foreign oil filled about 20 percent of our total energy demand—compared with 15 percent at the time of the Arab oil embargo of 1973-74. This situation is expected to get even worse—up to 24 percent or more by 1985. By pushing coal development, President Carter hopes to reduce oil imports

A trailer park houses construction crews building mammoth power plant near Rock Springs, Wyoming.

to about 15 percent by 1985. But can coal be pushed without seriously endangering public health? The answer depends upon how well we learn to burn coal more cleanly.

Recall, for a moment, that as the last group of astronauts was returning from the moon, and when they were still several thousands miles out in space, they reported that the only evidence of Man on Earth they could see was a yellowish smudge emanating from the Four Corners electricity-generating plant at Farmington, New Mexico. Since then, pollution-control equipment has been installed in that plant and it removes about 90 percent of all the particulate matter from the smoke. Yet, the stacks still spew out more than 46 tons of particles per day. Moreover, the particles which escape tend to be the very small ones, and these pose the gravest threat to human health because they penetrate the body's respiratory filters and lodge in the small airways of the lungs where clearance is slower and less certain.

One of several promising options being pursued is something called fluidized-bed combustion. In this kind of boiler, air is forced through a grid at high speeds to support particles of limestone and ignited coal. The high velocity of air causes the solid particles to act as a fluid, thereby improving their heat transferability. Limestone helps to soak up the sulfur released from the burning coal. Georgetown University is installing a fluidized-bed boiler system to provide steam power to the campus. It will use high-sulfur coal, but will easily meet Environmental Protection Agency emission standards.

Sulfur dioxide in coal is just one health hazard. The soot that does escape into the atmosphere contains benzopyrene, already identified as a carcinogen in cigarette smoke. Fourteen heavy metals, all of them toxic, are found in American coal. Radioactive isotopes naturally present in the coal would add more radioactivity to the air than all the nuclear power plants currently in operation. And burning coal in the quantities envisaged in the Carter plan would add as much nitrogen oxides, a constituent of smog, to the air as do all the cars in the United States.

Coal-fired plants would also produce 600 million tons of carbon dioxide a year. The gas is not toxic, but there is a real concern over whether adding that much carbon dioxide to the atmosphere every year would raise the average temperature of the planet and change the climate in unknown ways.

Increased coal combustion will also hurt agriculture to a certain extent, especially in those areas where coal-fired power plants and gasification plants are concentrated. Coal pollution, especially sulfur dioxide, attacks plants directly—stunting growth and reducing seed output. Some species, such as alfalfa, are more sensitive than others. Coal pollution also has a secondary effect on all plants which may be even more serious: it weakens their ability to resist natural enemies such as insects, disease and drought. An environmental

A sudden boom means lots of jobs, but also "alcoholism, accidents, divorce and delinquency."

impact statement prepared for two proposed power plants at Colstrip, Montana, predicted crop and grass damage of up to 20 percent within a 500-mile radius.

Sulfur dioxide pollution also contributes to a phenomenon first detected in Sweden and then in Canada —acid rain. The acidity of rain in the United States has been steadily increasing over the last two decades, especially in the East and the Midwest. Acid rain can leach nutrients from the soil, stunt plant growth, including forests, and drastically reduce aquatic life in lakes and ponds. Biologists at Cornell University who have observed a precipitous decline in the tadpole population in ponds around Ithaca, New York, for example, think that acid rain may be the culprit.

Combustion by-products that do not make it up the stack can be a problem, too. A 1,000-megawatt plant burning low-sulfur coal operating for a year will produce 71,000 tons of ash in the boiler, 281,000 tons of fly ash collected in the stack and 212,000 tons of sulfur waste. (Some of the ash can be used in highways and other types of construction.) Put another way, the solid wastes from the coal-fired plants expected to be on line in 1980 will, during their 30-year lifetimes, cover 65,000 acres when piled 30 feet deep.

In the West, coal development creates another kind of water problem. For this is a region where, as historian Walter Prescott Webb noted, "there is a deficiency in the most essential climatic element—water." So when strip mining lowers the groundwater table 10 to 50 feet, as it has in the Decker, Montana, area, it is a serious matter, affecting not only wells but the entire land surface because water moves surfaceward through capillary action. Furthermore, areas receiving an average rainfall of less than 10 inches per year may not be reclaimable after strip mining, however diligent the miner's efforts. (The Ford Foundation found that rehabilitation in Western coal fields would cost anywhere from $925 to $2,750 an acre.)

Water limits coal conversions

But it is the water demands of the new coal-fired power plants and coal gasification facilities which will cause the biggest headaches (SMITHSONIAN, February 1973). A National Academy of Sciences study concluded that "not enough water exists for large scale conversion of coal to other energy forms," and recommended that "alternate locations be considered for energy conversion facilities." There also may not be enough water for slurry pipelines proposed to transport coal from the West to the Southeast.

A case in point is the Kaiparowits Plateau in southern Utah (p. 33). This arid area happens to contain one of the biggest deposits of low-sulfur coal in the nation. A coal-fired power plant larger than Four Corners was originally planned for the spot, but then was withdrawn after considerable environmental opposition developed. Now three utilities propose building a coal gasification plant there that would produce 300 million cubic feet of gas from 30,000 tons of coal per day. The plant would certainly cause a significant deterioration in the region's air quality and would strain its already overbooked water supplies. Of course, the plant would also create jobs.

New jobs may be one of the second coal age's most positive impacts, as Mrs. Arda Morrell of Loa, Utah, notes: "We are an economically depressed area and need jobs. Jobs will bring our young people home again, and our families will be complete." Identical sentiments are voiced in West Virginia, Kentucky and Pennsylvania as well. In its heydey, the coal-mining industry employed 700,000 people. As a result of automation, that level of employment will never be achieved again, but will rise noticeably from its low point in 1972 of 126,000. The coal work force should increase to 243,500 by 1985 and 390,600 by the year 2000. At present, unemployment in the coal regions

of the country is more than 250,000. New coal-fired power and gasification plants and an expanded transportation system to move the coal will also create new jobs.

We are, indeed, on the threshold of some dramatic geographic shifts in populations. Between 1950 and 1970 one million persons migrated out of central Appalachia. Between 1970 and 1975 the tide turned and the population increased by several hundred thousand. It is expected to go on growing at an accelerated rate in the next ten years.

In the West, the influx of coal miners and construction workers and their families has already hit towns like Gillette, Rock Springs and Green River, Wyoming; Forsyth, Montana; and Helper, Utah. They are or soon will be boom towns, and many others are on the way. Not since the homesteaders flooded the region at the turn of the century has there been anything like it.

The new jobs, new money, new shopping centers have been accompanied by some problems. Public facilities—schools, roads, sewage-treatment plants—can not keep up. Consider the case of Sweetwater County in southwestern Wyoming, a coal boom area (SMITHSONIAN, July 1974). In 1970 its population was 18,391. By 1975 it had climbed to 45,000 and was still growing. The county has one hospital (built in 1893) and six primary care doctors. It is in the throes of what clinical psychologist Elden V. Kohrs calls the "Gillette syndrome" after another coal boom town. The syndrome consists of about equal parts "alcoholism, accidents, absenteeism, depression, divorce, and delinquency." Sweetwater County has the third highest per capita suicide rate in the nation. Rock Springs, the county seat, has grown from 11,000 people in 1971 to 26,000 today—half of whom live in trailers (p. 34—35). Wind in Rock Springs is often laden with dust from nearby strip-mining sites and the municipal water is frequently a dirty brown. More coal-related development is planned for Sweetwater County. The population is growing at a compound annual rate of 19 percent. Planners figure that sparsely populated counties like this one can absorb a growth rate of only 5 percent without serious socioeconomic troubles. There will be other Sweetwater Counties in the West before the coal is spent.

As the second coal age unfolds, logistical problems will arise. Railroads, mining equipment manufacturers and boiler producers will be hardpressed to deliver the goods and services demanded of them. Raising the necessary money could be a major hurdle. One study estimated that development of Western coal will require $16 billion in new capital, more than three times the industry's total capitalization right now. Temporary shortages could occur.

But these problems pale next to the ones facing our political institutions; the social stresses of the second coal age will be much greater than those of the first. During the first, concerns about coal miner safety, air and water pollution, and ravaged land were distinctly secondary to the business of producing and selling coal. Today this is no longer the case. Through laws passed by Congress and signed by Presidents, the nation has committed itself to the goals of safe mines, clean water, healthy air and reclaimed land. High growth in coal is also a national goal, however, and some conflicts are inevitable.

Coal development, as pointed out in a study made for the Office of Environmental Policy, must be a national program. Eastern strip mining provides large quantities of high-energy coal nationally at the cost of local land and water degradation. Water used in the West for power generation or coal gasification cannot be used for agriculture. Utilities need to know what they can burn and how much it will cost before they decide on the nature of future power plants. Coal companies must know how they can mine and to what level they must rehabilitate before they invest billions of dollars.

If it is any consolation, the second age of coal is unlikely to last longer than the first. It is clearly a transitional period. But a transition to what? That has yet to be determined. Perhaps to the first age of renewable energy— solar, organic, geothermal, wind and ocean-thermal gradients. Then, the Earth's remaining coal can be left to the makers of steel, aspirin, dyes, glue, cosmetics, fertilizer and margarine.

Near Shiprock, New Mexico, a dragline scoops Navajo coal. Machines on top drill blast holes in overburden.

By Aubrey Menen

Expatriate living in decadent Rome: it still beats home

For all its high prices and noise levels 'the world's most beautiful garage' remains a great place, yet foreigners are restive

Near rural Todi, Curtis "Bill" Pepper, correspondent turned author, his sculptor wife Beverly and their

I wish to write about the expatriates of Rome and these pages are the perfect place to discuss the subject. For the Smithsonian Institution does owe its existence to an Englishman who was an expatriate in Italy: who, interestingly, still *is* an expatriate, dead and buried not in Westminster Abbey or St. Paul's Cathedral, but in Washington.

In thinking of Rome, the words "decline and fall" echo, inevitably, in one's head. So it is with expatriates. Their time is coming to an end. They are going away. If, as is prophesied, the Communists will rule Rome any year now, nearly all will be gone. But, like Gibbon in at least this, let me begin as he did with the Golden Age.

It began after World War II. Apart from severe damage to a single ancient church, Rome had escaped the bombardments that had altered forever London, Naples, Dresden, Warsaw, Canterbury—a list too melancholy to continue. The Romans were not affected by the neurosis of defeat that seized Paris. They had merely lost a war they never wanted to fight, and the elaborate diplomacy of Pope Pius XII, himself a Roman, had kept them safe. His Papal predecessors had spent great fortunes in beautifying a city which they found a medieval slum.

It was a city where one could escape from the blight of destruction that had swept across Europe. But also a city where a thoughtful person could walk the ancient streets and bring that destruction into perspective. Romans are fond of quoting the remarks of visiting celebrities about their town, particularly if vapid or silly. One of their favorites was made by the American comedian, Jack Paar. Having been hurried round the ruins, he said: "When you have seen one old brick you have seen the lot." A comedian must always be funny: it was Paar's good fortune that he knew no history, because history is not funny at all. But to us, the expatriates, who knew at least some of it, Rome was like sitting and listening to Tacitus, Pliny, Plutarch, Suetonius, Gibbon, Montesquieu, Voltaire and our contemporary, Toynbee.

But let me immediately dispel an illusion, just as the other expatriates promptly dispelled it for me when, in the 1950s, I joined them: Rome was not the Paris of Hemingway, Picasso and Gertrude Stein. Romans do not read anything except newspapers and magazines, and they are proud of the fact. Their cen-

Weimaraner lounge on lawn of 14th-century Castello Torreolivola, which took them three years to restore.

tral library is short of new books and money. Their theaters present short and lackluster runs of plays so badly translated that a British playwright threatened to sue when one of them produced a mishmash of one of his. (*Hair* was presented with the cast in thick body tights.) Only in the past year and a half has the opera shown promise of becoming once more a major house. As for concerts, Gian Carlo Menotti has said, with conclusive truth, that the idea that the Italians are music-lovers is a myth which should be abandoned. Rome has been a cultural desert.

But Rome, of course, includes the Vatican. This is a place any expatriate, whatever his faith, will regard at first with awe. That is why the *other* expatriates would send him or her to meet the man who, until his lamented death in 1963, was regarded as the greatest expatriate of us all.

Monsignor Hugh O'Flaherty was a Vatican prelate; born in Ireland, he was brought to the Vatican where his specialty was to deal with fellow foreigners. Now the Romans have always regarded the Vatican with a skeptical eye. "We make the faith in Rome," they are fond of saying, "but we leave other people to follow it." You would meet O'Flaherty in the solemn precincts of the Vatican and, as soon as you and he had a drink in hand, that was one of the first things he would tell you. Next he would take you to a window and point to the automobiles parked in the courtyard of the Holy Office of the Inquisition, as it was then called. Each had a number plate marked SCV. He would ask if you knew what the letters stood for. "The Vatican City State," you would say. O'Flaherty would shake his head. "No. Here they stand for '*Se Cristo vedesse*'—'If only Christ could see what is going on.' "

The bar in the Vatican

He would take you round St. Peter's, and if you showed undue solemnity he would seize your arm, duck through two doors, and end in a bar—a typical Italian bar complete with Cinzano advertisements and espresso machines—and all within the walls of St. Peter's. He would take you round the Vatican Palace, when it was empty in the afternoons, and when you were speechless with wonder, take you to the Vatican bank—an ordinary bank with tellers, neon lighting and, when I was there, a worried abbess frowning at her overdraft.

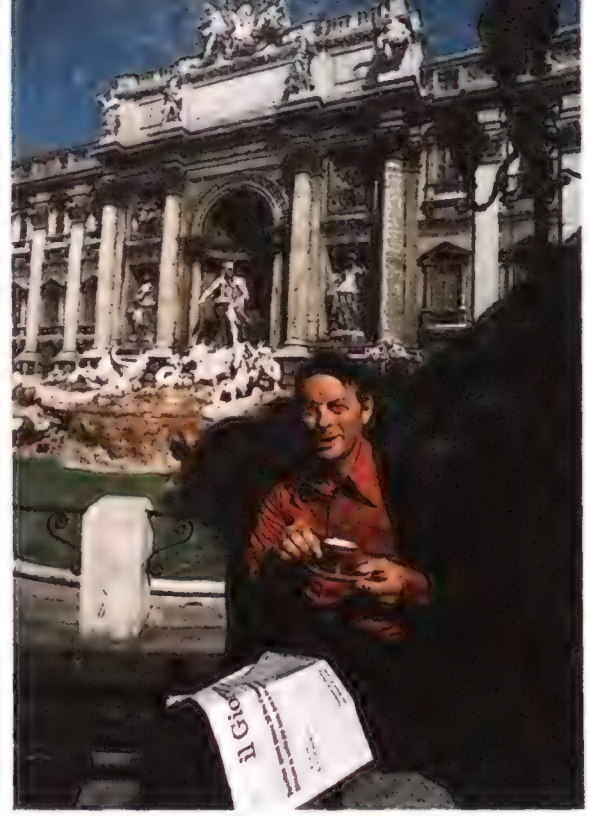
Every time you met him, you were one bit more a Roman. You even learned to call the Popes after their surnames, not their titles, in the Roman fashion —Pacelli (Pius XII), Roncalli (John XXIII), and so forth, because he told you that that was how the Holy Father answered the telephone.

And the Romans would tell you that *if* there was a saint in the Vatican, it was Hugh O'Flaherty. During the war he had risked his life, time and again, by hiding Italians, Allied soldiers and Jews whom the Nazis were going to shoot—hid them in the Vatican itself. After the war, honors were showered on him. He valued only one: no conductor on a public transport in Rome would ever allow him to pay his fare.

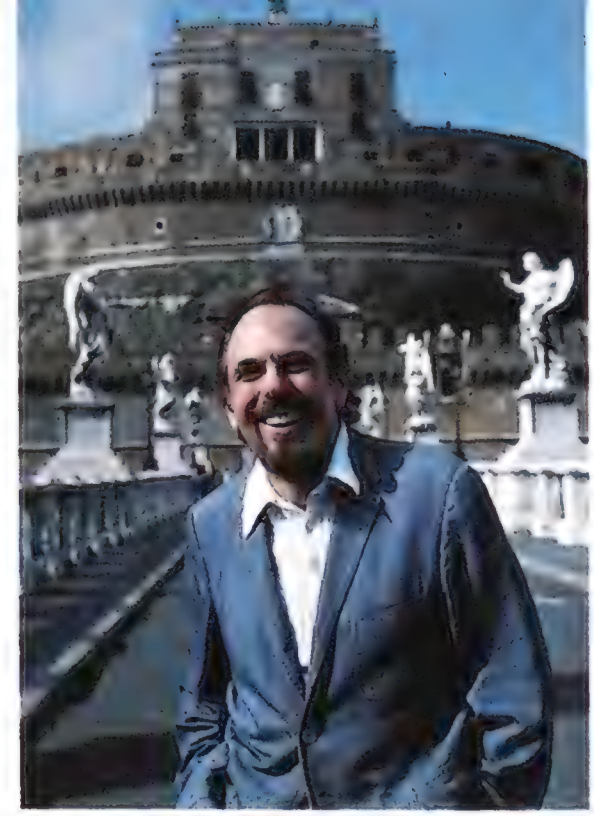
The expatriates soon learned how to do as the Romans do. There remained the problem of the cultural desert. This was looked after by a man who must be unique in Europe, an *honorary* expatriate. Mario Praz, as his name shows, is an Italian. But when young he went to England, fell in love with its literature and became an authority on the Romantic period—that of Byron, Shelley and Keats. His services to English literature have been so great that a British monarch made him a knight.

Color photographs by Enrico Ferorelli

The late Monsignor Hugh O'Flaherty came from Ireland, was a Vatican prelate put in charge of foreigners.



Philip Dallas, ex-Londoner since 1948, is now head of the Italian section of Wine and Food Society.



Joshua Hecht, American baritone, in front of Castel Sant'Angelo; both of them are associated with *Tosca*.

Sir Mario Praz lives in a large apartment which is one of the sights of Rome, because it is furnished throughout in the style of the early 19th century. Everything is exactly in period, down to the plates and knives and forks. Sir Mario is in period, too. The early 1800s was the time of the Gothic novel, the origin of our horror movies. Sir Mario will tell a visitor (if he likes him) that he is famous throughout Rome for having the evil eye. It does no harm to human beings but can work havoc on inanimate objects. The story is told (by Sir Mario himself) that once he was asked his opinion of a picture a friend had bought. He gave it a disapproving glance and, instantly, the painting crashed to the floor.

Sir Mario is English in speech, manner and dress. He serves a vital purpose. Rome being Rome, it is visited by celebrities of the English and American literary scene. For us expatriates, they are a problem. It is easy enough to whip up a party of princes, princesses, dukes and duchesses, but, Rome again being Rome, nobody has read their books. T. S. Eliot, coming to Rome for the premiere of an opera based on *Murder in the Cathedral,* was so upset by this that he took to his bed and did not attend the first night.

Sir Mario is our salvation. He has read everything. He also knows the way to an author's heart, which is to get him to talk about money. I recall Katherine Anne Porter seated nervously on a chaise longue, surrounded by Romans wondering who she was. Sir Mario said, "Miss Porter, tell us what you did when you heard the news of the success of *Ship of Fools.*" Katherine Anne Porter took the cue. She held up her hand: it bore a ring with an enormous emerald. "I went straight out and bought *this,*" she said, wiggling her finger. That was something every Roman could understand. Consequently, the party became a roaring success.

I am a republican by sentiment myself. I would have been on the side of Brutus and Cassius in that unfortunate affair with Julius Caesar. But that must not prevent me from telling the story of another expatriate, the husband of Orietta, Princess Doria-Pamphili. Orietta's family gave a Pope to Rome, and he, Innocent X, gave Rome the Piazza Navona, today one of the principal tourist attractions of the city. Orietta had vast properties, one of them an extensive park right in Rome. She married an Englishman from Yorkshire, a place known for its hardheadedness about money. Her husband, a chunkily handsome son of the solid English middle classes, set about putting Orietta's affairs in order. I recall driving with both of them through their park, and her husband telling me he intended to turn sheep loose on the lawn, which he did, with considerable profit.

The husband of a Princess can be accorded the courtesy title of "Prince." But in the Englishman's case, he was always introduced by his surname of Pogson, prefixed by "Meestair." Tired of being called "Mr.," he asked for the title. Rome pondered. Italian is one of the most musical languages ever invented. It sings, spoken properly, whereas English, to the Romans, sounds comic, it is so abrupt. On the other hand, Orietta's husband had done wonders (with his business sense) for the Doria-Pamphilis. So at the next reception he attended, the happy couple were announced thus: "La Principessa Doria-Pamphili e il Principe *Pogson.*" Mr. Pogson accepted the jest with an English sense of "'umour," another thing the Romans love. He is now among Rome's best-liked expatriates as Prince Doria-Pamphili, with all the rolling Italian sonorities that attend its utterance.

Author Robert Ardrey (*African Genesis*) and illustrator wife have been happy expatriates 16 years.

Commander John Rae smokes a ton of fish a fortnight (much of it expatriated Canadian salmon).

Writer-politician Gore Vidal, who doesn't like being labeled an expatriate, has been one a decade.

But not all expatriates slip so easily into their slots. The unhappiest are the foreign correspondents. For one thing, the Vatican does not believe in spot news. Until recently, a Cardinal had to hit a dead Pope three times on the head with a small mallet before it was quite sure he was extinct. Italian politicians are even more cautious, and with good reason. Every time an Italian prime minister says something that can be clearly understood, he brings down the government; this has happened 38 times since the fall of Mussolini.

Curtis "Bill" Pepper, the correspondent for *Newsweek*, took a drastic step; he suddenly threw the whole thing up and took to writing books. We, the other expatriates, were happy for his sake that the books succeeded, but sorry for our own sakes that Bill had given up journalism. He and his sculptor wife, Beverly, gave such splendid parties when the proprietor, or the editor-in-chief, arrived. They were the only expatriate parties where you might meet an "Empurpled One" *(il porporato)*, as the Romans would call him: to us, a cardinal. Beverly and Bill did the thing properly. Protocol demands that the Empurpled One's passage from his means of transport to your front door be illuminated by flares. This Bill did. But before the cardinal would traverse the honorific way, he would be stopped by Bill's little son, who, with American pragmatism, collected a dollar as a parking fee. His Eminence always paid.

Princes, princesses, prelates and Nobel Prize winners —in the interests of historical truth I stop this title-dropping, because it has all come to an end. And this is how it happened:

Immediately after World War II the Italians made a series of remarkable films. Such names as Vittorio de Sica, Roberto Rossellini and Federico Fellini tell the story by themselves. I have often talked to de Sica about the way it began. He said that they all made photographically stunning films because they simply did not have the money to make bad ones.

Be that as it may, the money soon came, mostly from abroad. Mussolini had built excellent film studios (Cinecittà) and there was an abundant supply of cheap labor (the world saw a lot of it dressed up in *Cleopatra*). Rome became known to journalists as "Hollywood-on-the-Tiber," a label as silly as others such as "The Empire State" or "The Big Apple." It would not have stuck save that Fellini, a young film director from the Italian provinces, seeing Rome's superficial glitter and what, to a provincial, were loose morals, turned them into a brilliant film called *La Dolce Vita,* a phrase that passed into international language. (It merely means "The Sweet Life" and may mean that again, now that the vogue has passed.) Fellini recently has admitted that Rome was never as wicked as he made it out to be.

I offer one memory of this garish period. The films had brought in a gaggle of "stars," and at times it seemed it was not possible to walk down the Via Veneto without seeing Elizabeth Taylor quarreling with Richard Burton, beautiful to look at, no doubt, but scarcely classical. But the movies had also brought us Gore Vidal, who decided, much to my surprise, to join us other expatriates. I was surprised because, on previous meetings, he had often told me that he aimed to be President of the United States, an office that he maintained he was born to hold.

We had great hopes of Gore. His reputation as a wit had preceded him. We took him to one of the elegant modern suburbs of Rome, full of high-rise apartments (of which I shall speak immediately). Gore looked

around him. "Why," he asked, "have I been brought to Westchester County?"

Gore's "Westchester County" was the product of the property developers, and it was they who struck the second blow.

An expatriate in Rome expected to live in an aristocratic and ancient palazzo, owned by impoverished nobility and furnished with ancestral pieces. Up until the end of World War II he could get what he wanted. Then came peace and the building boom. Rome leaped from a population of 1,500,000 to its present-day 3,000,000. The nobility, far from being impoverished, became millionaires, because they found that they owned neglected vineyards and grazing fields just outside the city for which property speculators threw money at their heads. They left their palazzi in favor of lush new apartments in the suburbs, furnished according to the modern taste of magazines such as *Casa Vogue*. They divided their palaces into as many apartments as an ingenious builder could cram in, and they installed central heating and plumbing. Neither worked, and for good reason. To do the job properly the palaces would have had to be virtually torn down, and this was not allowed. To cover this defect, the rents they asked were extortionate.

It was Beverly Pepper who, for a while, showed us how to cope. She turned her back on our disastrous palazzi apartments. She crossed the Tiber to a slum called Trastevere. Here the inhabitants, claiming to be the only remaining true Romans, spoke a dialect all their own and of a remarkable vigor. (They claim to have more than 2,000 vulgar words to describe the human genitalia, and they use them at the tops of their voices in their narrow, winding and ancient streets.)

Here Beverly, with her writer husband Bill, converted a rundown house into a dwelling designed with all Beverly's sense of planes and volumes and space.

But nothing lasts in Rome except Rome itself. The property developers got themselves asked to Beverly's new house and took notes. They bought up swaths of old Trastevere, remodeled them, and let them out to foreigners at rents which, as the people of Trastevere cynically remarked, were high, but included the rats and roaches. Two new expatriates opened a tourist restaurant. The inhabitants of Trastevere enjoyed themselves by shouting obscenities at foreigners with warm and welcoming grins. Always characters, they grew more "characteristic" than ever. But, as Beverly said to me the last time I saw her, "How tired I am getting with the whole lot of them." She now works in the remote Umbrian town of Todi.

Gore Vidal has followed her example. He now pursues his political ambitions, and writes his brilliant novels, 300 kilometers away to the south, in Ravello.

But there is one community of expatriates who have stuck it out. They are—who else?—the English. They are embattled, but that is a situation (as has been remarked before) that calls forth their finest hour. They had come to Rome when it was still the world's most beautiful city, and not, as we expatriates now say, the world's most beautiful garage. When things went wrong, they magnificently ignored the change. They took their walks, as usual, holding up the chaotic traffic with an imperious hand. Others, elderly women impoverished by the fall in the pound and the rise in rents, still firmly feed stray cats round the Pantheon, though they have not enough money to eat satisfactorily themselves. The Romans regard the English cat-benefactors with an awe that they do not extend to the Pantheon itself.

But the rest of us have scattered to the Italian countryside. My last apartment was hard by the Spanish Steps, in a street of beautiful 17th-century architecture. Each night I was kept awake till four in the morning by music and female shrieks. I told my housemaid one morning I thought there must be a brothel nearby. "Three," she replied, with Roman succinctness. And so I am writing this on the verdant slopes of Vesuvius. From my window I can see the ruins of Pompeii. Yesterday I visited a vast Roman villa built in Nero's time. They, too, left Rome whenever they could. Their places of retreat are scattered all along the coast of the Mediterranean. So we, the expatriates, once of Rome, in getting out of town are only doing what the Romans did themselves.

Author Aubrey Menen has moved out to Vesuvius' slopes and lives near the ruins of Pompeii. Here, looking—every white hair of him—the model expatriate, he sits before Temple of Jupiter.

"The Great American Scream Machine," a 1973 coaster, towers over the Atlanta theme park, Six Flags over Georgia. It offers courageous customers a smooth but fearsome ride.

By Robert Cartmell

Roller coaster: king of the park

Mister Twister or Texas Cyclone, the great American thrill machine packs 'em in and wrings 'em out

Turn-of-the-century ride at Coney Island ended with a splash into the water.

In quieter days, two steamboats, *Americana* and *Canadiana,* used to cross Lake Erie between Buffalo and Crystal Beach on the Canadian side. It was a tranquil ride, and the park at Crystal Beach became a favorite picnic ground for western New Yorkers.

The peace was shattered in 1927. Crystal Beach opened a horrendous roller coaster called the "Cyclone." Designed by Harry Guy Traver, it was billed as "The Most Fearsome Coaster Ever Built." Some 75,000 people came to its opening day and knocked down railings to get a good look. The vice president of Crystal Beach recalls that "the 'Cyclone' was a wicked ride. Before the last cars left the top of the first hill, the front car had already started on a bank. Every turn was twisted sharply and there was a figure-eight which the cars ran at top speed. The 'Cyclone' is the only coaster that I have heard of that had a nurse manning a first-aid station."

Riders often fainted, and broken ribs from flying elbows were not unusual. People came from all over the world to watch; some dared to ride. (Even now, Hollywood is capitalizing on these reactions with *Rollercoaster,* in something called "Sensurround.")

Palisades Park, located on the Hudson across from Manhattan, watched the "Cyclone's" opening with interest. They needed something to rival the roller coasters out at Brooklyn's Coney Island. They ordered an identical monster from Harry Traver. The new "Cyclone" opened in 1928 and Robert Garland reported on it in an editorial for *The New York Telegram:* "As a connoisseur of roller coasters, I advise you to consult a doctor before you climb aboard the new 'Cyclone' at Palisades Park. . . . That 'Cyclone' doesn't play fair. It drags you up an incline, tosses you down the other side, turns you over this way, turns you over that way, and before you can remember what comes after 'Thy kingdom come,' shoots you to stars again."

Then the Depression hit. The next 30 years saw 1,300 roller coasters ground under by bulldozers or left to decay. Even Harry Traver's "Cyclones" were leveled—not an easy job, since wrecker's ball, weather, bulldozers and dynamite barely budged them. Crystal Beach finally decided to use some of the structuring and wooden parts in a new, mostly steel, coaster. The wood and steel remains have become a shrine for roller coaster buffs.

Amusement parks remained in the doldrums until the early Fifties. Walt Disney found them "dirty and unpleasant" but gambled on the idea and built Disneyland. Instead of a scattering of rides, his park was like a preplanned movie set with every part related. This idea of a "theme park" rejuvenated the industry. The response through the Sixties and Seventies has

Russian ice slides, a framework hill for sleds, was the world's first coaster. Date: 17th century.

been tremendous. Walt Disney World in Florida, for example, had more than 13 million visitors last year.

Where did the undisputed king of the amusement park get its start? The answer: Russia. Not long ago, a Soviet track team was eager to ride the "Rebel Yell" at Kings Dominion, the new theme park outside Richmond, Virginia. During the ride they kept chanting "Russian Mountains" (a European term for roller coaster), although they did not speak English. Their guide later explained to them that roller coasters originated as ice slides built on a solid framework of wood in St. Petersburg during the 17th century. Passengers sat in a guide's lap—both precariously balanced on a two-foot sled. They then shot down a 70-foot high, 50-degree slope at dizzying speeds. This inspired the name "Russian Mountains."

The French prolonged the coaster-riding season by establishing the first wheeled coaster in Paris in 1804. The name "Russian Mountains" was used. In 1817, the famous "Aerial Walk" opened at nearby Beaujon Garden. Its many improvements and safety devices soon made the 1804 ride obsolete.

The first roller coaster in the United States was an inclined railway used to carry coal down to Mauch Chunk, Pennsylvania. In 1870 it was converted to haul passengers to the top of Mt. Pisgah, then drop them at a rate of 60 feet to the mile. A slow pace, but the ride through the mountains was magnificent.

It took the engineering skills of LaMarcus A. Thompson to make a device like the Mauch Chunk Railway work at an amusement park. He became known as the "Father of Gravity"—and an inventor of the commercial roller coaster. Thompson installed a primitive device called "The Switchback Railway" at Brooklyn's Coney Island in 1884. Cars ran down an undulating track, seldom exceeding six miles an hour; attendants then pushed the cars up the next hill for a return ride. It was crude but immensely popular. A day's receipts totalled $700 (at five cents a ride), and Thompson was overwhelmed with orders.

On the same beach, Captain Paul Boyton installed a bizarre apparatus called the "Beecher" or "Flip-Flap Coaster." On this rickety nightmare, cars performed a 360-degree somersault. Only the blessings of centrifugal force clamped the cars to the tracks—and the passengers to their seats. Frequent complaints of an uncomfortable strain on the neck caused a decline in patronage, and the ride was soon dismantled.

In 1901, Edward Prescott's "Loop-the-Loop" became the talk of Coney Island. Instead of the Flip-Flap's true circle, the new ride successfully used an elliptical track and removed those "uncomfortable strains." The success was short-lived. Many remained skeptical though a glass of water, on test runs, failed to spill a drop.

The Roaring Twenties saw Coney Island boom, and Riverview Park in Chicago operated six coasters. Pioneers of aviation, including the Wright Brothers, admired the speed, curves and drops. Charles Lindbergh (who once worked in an amusement park) reportedly said that Coney Island's 1927 "Cyclone" was a greater thrill than flying an airplane at top speed.

Coaster buff Cartmell recently researched a display about his machines which toured the country for the Smithsonian's Traveling Exhibition Service.

Beaujon Garden of Paris featured this "Aerial Walk" in 1817. Wheeled vehicles had replaced sleds.

Coney Island's famed "Scenic Railroad" does its stuff for its straw-hatted, shirtwaisted clientele.

Working with Frank Church, Harry Traver assembled a masterpiece at Playland park at Rye beach, New York. Aptly named the "Aero-Coaster," it was the greatest body-wringer and the most violent ride ever built. It was not only 90 feet high but had its first drop ten feet below ground. It looped continually and never stopped grinding until it reached the platform.

How do the rides of today compare with these legendary coasters? Many will say the rides built in the 1960s and '70s make the older coasters look like child's play. Others will tell you that it's financially impossible to equal the thrills, ingenuity and craftsmanship of the older rides. One yardstick exists. The 1927 "Cyclone" still stands on Surf Avenue at Coney Island. By any measure—including today's wax-smooth rides—it is a masterpiece. It is 80-foot proof that the coasters of the Twenties were the finest ever made.

Prominent among today's coaster designers is John Allen, formerly of the Philadelphia Toboggan Company. His masterpiece is probably the "Mister Twister" at Elitch's Gardens in Denver. Ninety-six feet high, it is crammed with treacherous hills and curves and has the best tunnel ride in existence. Many list it as the finest roller coaster standing today.

The Associated Press lists the "Texas Cyclone" at Astroworld in Houston as the ultimate roller coaster. A close second is the "Thunderbolt" at Kennywood Park near Pittsburgh. It uses a natural valley to hide the most frightening parts of the ride. The final drops of 80 and 90 feet make its finish the most devastating in the world.

Yet it's not the finish, nor the first drop, nor the curves that distinguish a great roller coaster. It's the pacing—the way the speed, hills, curves, tunnels and finish are combined. A good roller coaster is as theatrically contrived as a Broadway play. "We build in psychology," says designer John Allen. "Part of the appeal is the imagined danger. That's why riders start screaming before the car even takes off."

The ride up the first hill is intentionally slow; the car is allowed to dangle at the top so that you can contemplate the view—for miles—and savor the supposed terrors ahead. Then down it goes. The thrill comes not from the speed but from accelerating in seconds from 5 mph to 60 mph and into a state of weightlessness. That's the glory—or horror.

Every effort is made to make a roller coaster seem terrifying, yet the ride is among the safest at an amusement park. The fear that cars will jump the track and that the passengers will be thrown out is unfounded. The cars cannot jump the track because undertrack wheels prevent their flying upward, and side friction wheels keep them on course. An iron bar locked across the passenger's lap can be released only by an attendant or by a device.

Despite all precautions, major accidents do occur. Passengers change seats in mid-ride; they stand; they perform balancing acts on sharp curves. "All patrons

are possessed with an old suicidal instinct and the wisest operator devises means to prevent them from doing away with themselves. We just have to figure the customer as an accident, looking for a place to happen," says a former Coney Island operator.

At the old Glen Echo Park in Washington, D.C., a fully loaded coaster car started up the first hill with a young couple in the front seat. He foolishly attempted to stand at the top and was thrown to the pavement below and instantly killed. The ride had to finish but it took two interminable minutes. All the passengers had seen the accident, since it happened in front of them. The young lady whose escort had just been killed stepped out. The other 12 passengers stayed on!

At Conneaut Lake in western Pennsylvania, the coaster entered a dark tunnel midway through the ride. Nightmarish screams could be heard for miles as the cars echoed through the dark recesses. The screams continued until the train reached the unloading platform. Passengers flew off the cars, stumbling, arms flying, gasping for breath. The front car had hit a skunk.

Most mishaps involve belongings: wallets, wigs, hats and keys are often lost. Operators say they find enough loose change under the tracks to keep them going into the winter months. A bra and false teeth were found under the "Cyclone" at Coney Island. LeSourdsville Lake Park outside Cincinnati had a girl wearing a paper dress on their "Space Rocket." She returned, says the maintenance crew, stark naked.

Has the Ultimate Roller Coaster been built? No. Is there a limit to what the designers have planned for our minds and bodies? No again. Walt Disney World opened its 175-foot high "Space Mountain" in 1975 at a cost that was more than that of Disneyland in 1955. James Irwin, lunar module pilot of Apollo 15, calls it rougher than Saturn V.

Knotts Berry Farm in California has premiered its "Corkscrew Coaster." Based on the 1901 "Loop-the-Loop," it drops passengers off a 75-foot precipice into two 360-degree somersaults. Nearby, at Magic Mountain, "The Great American Revolution" coaster features a ghastly vertical loop 70 feet high.

In a recent "Ultimate Roller Coaster" competition, three Fairchild test engineers submitted the KC-135 research plane (affectionately labeled the "Vomit Comet") as their candidate. It won hands down. Height: start at 25,000, peak at 35,000 feet; distance: 9 miles horizontally in 70 seconds for each parabola. These statistics were shown to a coaster designer. He roared, then headed for the drawing board.

Rompo Frolique was name of fanciful design once intended for Lookout Mountain, Tennessee.

World's largest corkscrew coaster
at a park in Santa Clara, California.
Its name is "Turn of the Century."

Please do not read the next two pages. Which Qantas hopes will lure you to my home, Australia.

100 things to see and

1. See the soaring sails of Sydney's $100 million opera house. Orchestra seats: about $10. You could see the likes of Joan Sutherland, Roberta Flack, Rudolf Serkin and the Sydney Symphony.

2. Fly over the water on the hydrofoil to Manly. On the way you'll see Pinchgut, an island fortress named for the short rations they fed convicts a century ago.

3. On a sheep station outside Canberra you can see a sheep dog round 'em up. He takes the shortest route from one side to the other: across the backs of the woolies.

4. Buy a boomerang from a man called Mulga Bill and chances are he'll throw in some instruction for free.

5. Watch a torch-light parade. At dusk on Phillip Island, the tiny fairy penguins march solemnly up from the sea.

6. Catch the organized mayhem called Aussie Rules Football. It's like soccer, rugby, basketball and a marathon rolled into one.

7. Watch a kangaroo go. At Tidbinbilla they hop to it at better than 30 mph.

8. Stargaze. Look up at the blazing Southern Cross.

9. Ride a Murray River paddle steamer. From Goolwa to Mypolonga to Munnum to Swan Reach. And back.

10. Go to jail. Stand in the tiny cell where Ned Kelly, the notorious bush-ranger, was in-carcerated. Listen. You may hear the echo of his mother's voice, "Mind you die like a Kelly, Ned."

11. For lunch, pick up a hot meat pie. Take a bite. Now you know why they outsell hamburgers Down Under.

12. Off the north coast of Queensland, you can see more kinds of fish in the sea than anywhere on earth.

13. Save money. Take a 14-day Fly/DriveTour of Australia.

Includes economy round trip, an Avis car with 500 free miles, first class hotels. Price, including tax, is based on GIT fare from the West Coast with two people sharing the car and hotel.

14. Boggle at the very fine specimens of bronzed bikini on Bondi Beach. Or hang ten at any of a dozen beaches within an hour's drive of Sydney.

15. Fish. Get into a battle with the big ones off the Great Barrier Reef.

16. Have an Aussie beer. Hoist a tall one to accompany even taller stories in a country pub like Tanswell's Hotel.

17. Hotdog in the Australian Alps

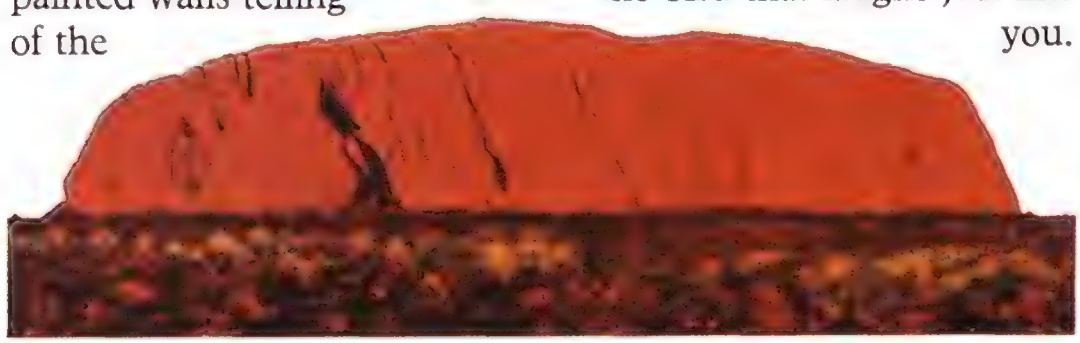
do in Australia.

where Mt. Kosciusko towers over a snowfield larger than all Switzerland.

18. Rent a car. Kindly remember, koalas have the right of way.

19. Find your special island. There are more than 600 along the Great Barrier Reef.

20. Get out to the Outback. To Ayers Rock, the world's biggest monolith. Around its base lie secret caves with painted walls telling of the Aboriginal Dreamtime.



21. Play a didjeridoo, an Aboriginal musical instrument. Go ahead, you can play it. There's only one note.

22. Order a thick sirloin stuffed with Sydney Rock Oysters. Tell the waiter you want a carpetbag.

23. Listen to a lyrebird. He can imitate anything from a power saw to a barking dog to a truck.

24. See a city stop. On the first Tuesday in November, when they run the Melbourne Cup, all Australia stops. Then as the thoroughbreds thunder home, a nation cheers itself hoarse.

25. Tie a fly and land a fish. Rainbows have been known to tip the scales at better than 30 pounds at Lake Crescent.

26. Do nothing. Lie in the sun at Surfers' Paradise.

27. Try to get the last laugh on a kookaburra, the bird that laughs just like you.

Try the Oysters Tsarina, with a topping of sour cream, minced onion and caviar. Richer than Rockefeller.

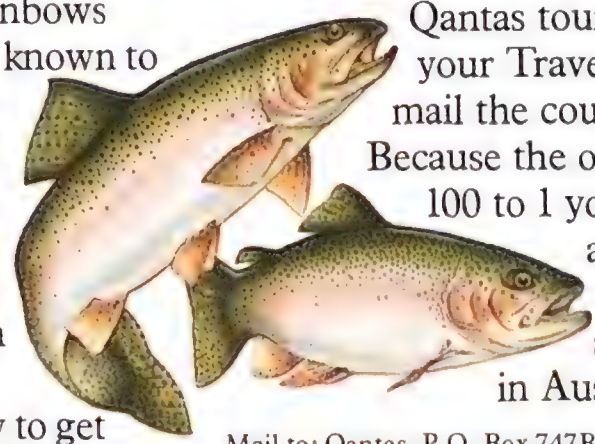
28.

29. Bet. Bookies are legal at the tracks. And Aussies will bet on anything. Including two flies walking up a wall.

30. Don't miss our summer Surf Carnivals where you can see surfboat crews and lifesavers battle waves two stories high.

31 to 100.

You'll find them in our big new Qantas South Pacific Tour Book, along with 86 great Qantas tours. See your Travel Agent or mail the coupon. Because the odds are 100 to 1 you'll find all sorts of things to see and do in Australia.



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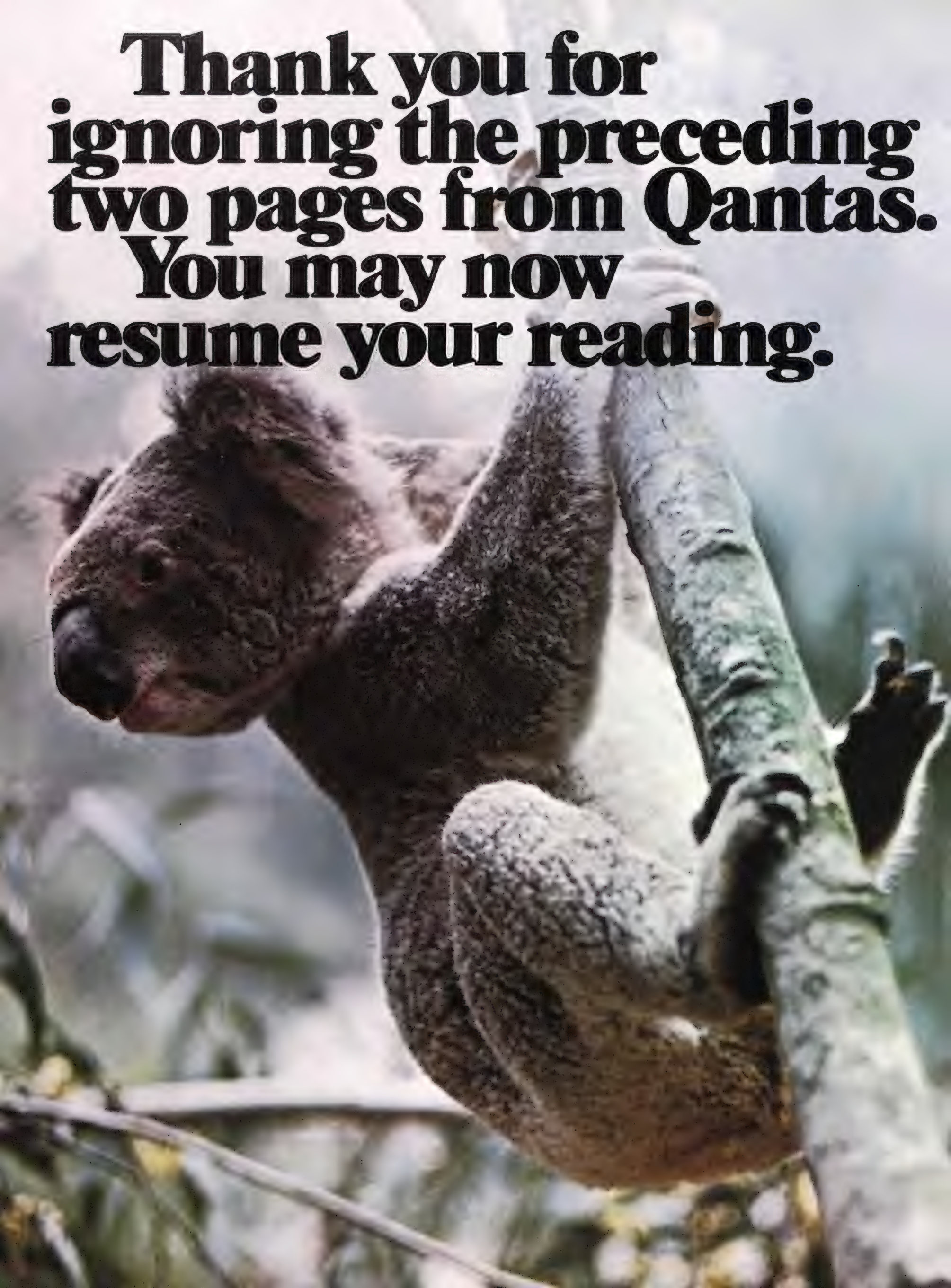
Thank you for ignoring the preceding two pages from Qantas. You may now resume your reading.



In the Transvaal: a N'debele village with richly patterned walls.

An African 'village' on Capitol Hill

The Museum of African Art dresses up an alley (turn page)

In Washington: similar designs decorate the Museum's courtyard.

African 'village' on Capitol Hill

By Warren M. Robbins
Director, Museum of African Art

In the otherwise dusty, monochrome landscapes of the Transvaal in South Africa, one may come upon a sudden burst of color. This would be one of the villages of the N'debele people, who live to the north and east of Pretoria and Johannesburg. They paint their houses and the walls of their compounds with bold geometric murals unlike anything found in other parts of Africa —or anywhere else, for that matter.

Except in Washington, D.C. There, just a few blocks from the Capitol, one can see the same vivid colors and strong outlines of the N'debele murals. Painted in faithful reproduction on the walls of the inner court of the Museum of African Art and on nearby garages and carriage houses, they are bringing to these formerly drab precincts the look and sun-drenched qualities of the African villages they replicate.

Among the N'debele, the paintings are executed by the women of the village. Governed as much by the climate as by tribal tradition, the annual refurbishing of the village walls begins in the winter. This is an important time of the year to the N'debele, for it is during this season that the young men are initiated into the ancient and arcane rituals of their people. At the same time, young girls who have reached the age of puberty are taught the traditional mural patterns and given an opportunity to perfect their skills as they assist their mothers in repainting the previous year's designs, bleached by the sun and washed away by the rains. As the landscape turns sterile with the gathering of the harvest, the brilliant splash of color presented by the newly painted kraals is a feast to the eyes and a solace to the spirit.

In painting the murals, each woman—utilizing traditional symbols and designs (the original meaning of which she probably does not know)—strives to make her home so attractive that her husband will not be tempted to go elsewhere. N'debele architecture is dominated by simple rectangular or circular shapes; the adobe dwellings are surmounted by thatched roofs and broken only by a single door and two or three windows. Virtually every vertical surface is decorated. The motifs of the designs are based on subdivisions of the rectangle, and traditionally take the form of chevrons, triangles and lozenges, heavily outlined in black and filled in with flat washes of primary color. These colors were originally obtained from local soil, but the women now use commercial water-soluble paints—partly because they provide an otherwise unobtainable blue. The more public areas have polychrome patterns; the side and back walls are normally black, white and the natural color of the local clay.

As in Africa, the Washington murals are being designed and painted primarily by women—staff members and neighbors of the Museum, with a little help from their friends. Situated in a historic neighborhood that is currently being restored to its former charm and beauty, the murals—with their alien inspiration —might seem to strike a discordant note. However, among some of the N'debele there has been a noticeable change in the traditional geometric designs as a result of their exposure to urban artifacts. Representations of balustrades and wrought-iron gates derived from the early Victorian architecture still found in Pretoria are beginning to be seen in the wall murals. Thus, in introducing these motifs amid the Victorian houses of Capitol Hill, the Museum of African Art is, in a certain sense, juxtaposing African adaptations with their prototypes. Furthermore, as a precaution against violating the 19th-century character of the neighborhood, the murals do not extend all the way to the streets at either end of the alley.

While the N'debele are being exposed to ever greater urban pressures, and the tourist appeal of their villages is giving rise to an inevitable self-consciousness about their art, it is hoped that the strength of their creativity will permit the graceful assimilation of influences of the modern world.

Buildings in foreground are nearly finished, but others show alley walls still to be painted.

WHY VOLVOS SEEM TO GET BETTER AS THEY GET OLDER.

Everybody loves a new car the day they drive it home from the showroom.

But ask them about it a few years later and you're likely to hear a different story.

Which is why you should consider owning a Volvo.

Volvos are filled with things that people grow to appreciate as time goes by.

For example, our passenger compartment is designed not just to make you feel comfortable, but also to make you a better driver. The front seats

are infinitely adjustable. And the roof pillars are narrow enough to be seen around. So you always see what's going on around you.

Drive under these conditions for a few months and the car begins to feel as if it's becoming part of you. If you're like many Volvo owners you'll develop a new self-assuredness on the road. Caused by the way our rack and pinion steering lets you maneuver in traffic. And slip in and out of parking spaces.

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And while the odds are that you'll stop

at least once during your first year to marvel at our four wheel disc brakes, (usually after your first panic stop,) you'll probably never take advantage of our triangular circuit braking system. (It gives you about 80% of your braking power if one circuit ever fails.)

After a few years pass, there are dozens of other things you'll come to appreciate.

Like the way the seat slowly conforms to your body and becomes *your* seat. Or the way the car is finished.

To keep your Volvo looking good for a long time, it comes with six coats of paint and primer. And two separate undercoatings instead of one. Or none. So if you ever do decide to sell your Volvo, looks won't be the reason why.

At Volvo, we give you a car you can keep.

More importantly, we give you a car you'll want to.

VOLVO

The car for people who think.

By Philip B. Kunhardt jr.

Second of two parts

Hold still—don't move a muscle: you're on Brady's camera!

With studio aids such as neck clamps and a weighty volume for resting a hand on, the famous photographer worked his magic

Frederick Hill Meserve, shown in his study, was first serious collector of early American photographs. During much of a long lifetime he specialized in Lincolniana and Mathew Brady.

"Brady Daguerrean Miniature Gallery" the painted block letters announced on the cornice of the building. If this did not capture a prospective customer's eye in the 1840s, glass cases on the street displaying a few of Brady's latest pictures did. Inside the entranceway a painted finger pointed up the three flights that had to be climbed. Out of breath, the customer was usually met by the proprietor—a pleasant, lithe, sharp-featured young man with steel-rimmed glasses and unkempt hair.

Along with the smell of iodine and the clutter of cameras and brushes, of tubes of oil colors and polishing cotton to make the silver on the daguerreotype plates gleam, of frames and lamps and pliers, the customer was usually struck by the amount of light in the room. Mathew Brady had installed a series of skylights in the roof which, at the height of the day, allowed the sun to come blazing in; the bright light could then be controlled by curtains and mirrors and screens.

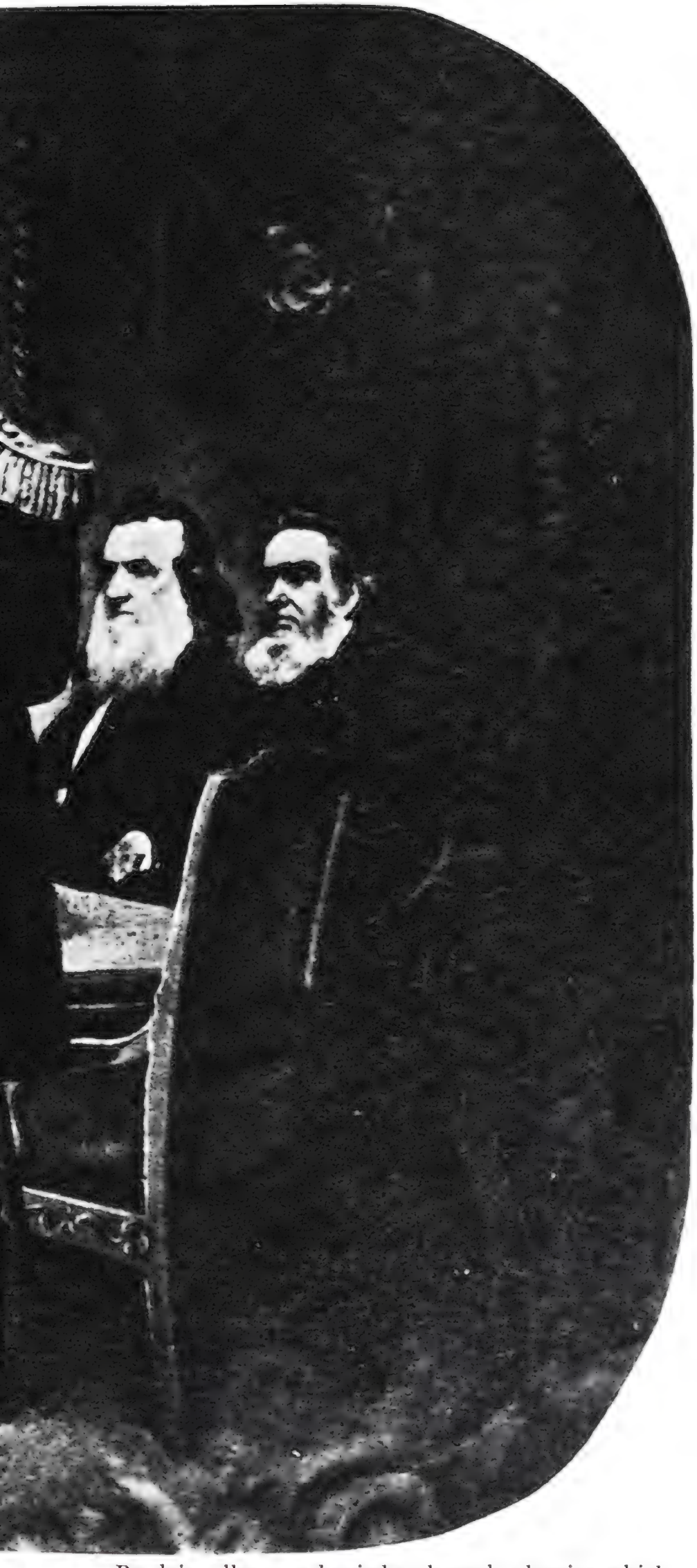
The customer was rendered immobile by the iron back- and headrest, a precaution necessary because of the long exposure. A half-collar iron clamp cradled the back of the neck, a metal bar poked out and steadied the small of the back. A sturdy metal base was sometimes visible behind the feet in the full-length daguerreotypes.

One of Mathew Brady's earliest camera operators, if not the very first, was James A. Brown, hired in 1844. When a subject had been properly placed in the clutches of the iron clamp, Brady and Brown went to work. A sheet of copper, plated with silver and then highly polished and buffed, had to be washed in a

This excerpt is from a forthcoming Time-Life book, Mathew Brady and His World, *which makes use of the extensive Meserve collection. Prints from the original Brady negatives are also being distributed.*

P. T. Barnum leers at ballerina Ernestine de Faiber
who, gossips said, had danced her way into his heart.

General Winfield Scott, who left command in 1861, seems to report to Lincoln and his Cabinet—from left, Caleb Smith, Salmon Chase, Montgomery Blair, Simon Cameron, William Seward, Gideon Welles and Edward Bates—in this composite, made up from Brady photographs of its individual members.



Brady's colleagues decried such costly phonies, which took so long to put together all news value was lost, but Brady indulged himself for "art's" sake.

Actor Charles Parsloe's dramatic pose reveals backrest, usually cleverly concealed behind subject.

solution of nitric acid, rendering its surface absolutely clean. Then it was exposed in a dark area to iodine vapor and related chemicals, which sensitized it to light. With the image of the subject put carefully in focus on a ground glass inside the camera and the subject given strict orders not to move—not even a twitch of a nerve—the ground glass was removed and replaced by the prepared plate. Off came the lens cap. No one stirred, for the slightest vibration would blur the image.

After the required time (Brady left no record as to what his exposure times might have been), on went the lens cap again and out came the plate. It was then exposed to mercury vapor at a temperature of 167 Fahrenheit until the image was completely visible,

Don't move—you're on Brady's camera!

washed with hyposulfite of soda and finally rinsed in distilled water. Picture sizes usually ranged from the whole plate (6½ by 8½ inches) down to 1/16th of a plate (1⅜ by 1⅝ inches), with three other standard sizes in between. After drying, the picture was mounted under glass in a case to suit the customer's taste.

Brady had many helpers. And that raises a question. If James Brown and Polycarp von Schneidau and George S. Cook and Austin A. Turner and J. F. Coonley and Andrew Burgess and William O. Braithwaite and Luther Boswell and Isador Muller—to name but a few of Brady's operators and assistants and managers during the many years of his career—were taking pictures for him, what were Mathew Brady's own duties?

He was in charge of the galleries; he oversaw their operation—from choosing which lenses and cameras to buy and use to decorating the waiting rooms. He picked the assistants and watched the quality of their work; he was responsible for the advertising and promotion of the business, and certainly for the style of the photography from lighting and posing to retouching and framing.

Brady surely learned the early tricks of the trade, and probably invented many of them through trial and error: never let a subject's hands rest on his chest (breathing blurred them); take special care with white clothing (it exposed much faster than dark clothing and therefore often had to be covered during part of the exposure); rub a freckled face until bright red (without a uniform look to the skin, any spots—moles as well as freckles—could look blotchy); plump sunken cheeks with cotton; keep adhesive wax handy for pasting back ears; sometimes raise or lower a camera for correcting a distorted face or elongated neck; use soft, diffuse light for a fair young lady; on occasion use eye makeup or rouge for an oil-painting effect; beware of photographing dogs, cats or small children—most

Actress Pauline Cushman used her skills to spy for the Union, later lectured in uniform.

couldn't sit still. Photographers must have concluded that the dead or dying were good subjects.

Many myths grew out of the studio sittings. One had it that a large light shade fell from its position above Senator Thomas Hart Benton, smashed over his shoulders and pinned him to the headrest. His outraged cries brought Brady from the darkroom.

Mathew Brady's most famous foreign customer was Albert Edward, the 18-year-old Prince of Wales (p. 64), who was the first member of British royalty ever to visit the United States. After being welcomed to New York in 1860 by half a million cheering people and attending the historic Diamond Ball at the Academy of Music, the Prince decided to have his picture taken

Mrs. G. H. Gilbert, a famous character actress, specialized in roles of eccentric old women.

Playwright-actor Dion Boucicault hams it up for Brady. He wrote or adapted 300 plays.

Boucicault charmed audiences by theatrical tricks, emoted on social themes, including evils of slavery.

by Brady. On October 13, before posing for the camera, the Prince and his entourage spent almost an hour admiring the portraits of the famous.

In the early 1850s photography, which for more than a decade had been dominated by the daguerreotype, began to undergo rapid change. The glass-negative collodion process had been invented, which made enlargement of pictures possible—and endless duplication. By the late 1850s the beautiful, delicate but unduplicable daguerreotype was doomed.

In 1856 Brady had the good fortune to obtain the services of Alexander Gardner, a Scot schooled in chemistry and physics as well as photography, and a good businessman, too. Gardner had already mastered

Don't move—you're on Brady's camera!

Horace Greeley, founder-editor of New York *Tribune* and noted liberal humanitarian, sat for a Brady daguerreotype in the 1840s.

Prince of Wales, later Edward VII, visited the States in 1860 and of course posed at Brady's.

Mark Twain posed at Brady's Washington gallery in 1871, thought its "treasures" a gold mine.

Harriet Beecher Stowe, author of *Uncle Tom's Cabin,* posed for this seldom-seen daguerreotype. Her brother was Henry Ward Beecher (below).

the collodion negative, and he also brought with him from abroad a fine knowledge of how to enlarge a picture. Brady, whose earlier Washington gallery had failed, realized he finally had the right man. He opened a branch in the capital early in 1858, with Alexander Gardner in charge.

Gardner handled everything in Washington, from the bookings and billings to the supervision of the printing and equipment, and the direction of the operators. But his role was anonymous—the pictures he took or oversaw carried the Brady imprint.

The Washington studio was on Pennsylvania Avenue between Sixth and Seventh streets. The spacious reception room on the second floor, open every day but Sunday, was furnished with chairs, a large sofa and several easels to lend the air of an atelier.

The pictures that customers came for were taken in the cluttered studio—or operating room—on the top floor. Scattered about were the props that were to become a familiar part of Brady's Washington photographs: a large, ornate gold clock that stood at 11:52; a leather-bound copy of the Congressional annals, for placing one's hand upon; a four-foot Corinthian column that became Ionic when turned around. All over the floor of the operating room were built-in sockets, body and headrests and neck clamps.

Beneath the operating area, on the third floor of the building, were the finishing and mounting rooms. Here were the retouching brushes and inks and colors that could alter features and clothing or change the

Brady presented portraits of many American literati, though it is doubtful if he actually took Ralph Waldo Emerson (left). Next are poet Walt Whitman and the Rev. Henry Ward Beecher.

Portrait of talented actor John Wilkes Booth, slayer of Lincoln, was a Brady copy of another's work. Assassin's brother Edwin Booth, top actor of his time, sat a year later with daughter Edwina (below).

backgrounds of pictures completely. Women could have the wrinkles taken out of not only their dresses but also their faces. Here also were the piles of fragile tissue paper, layers of which were used to mask out unwanted areas of a picture, or to vignette a face and let the rest of the image fade softly. Usually, women were employed for this delicate work. Women were used as hairdressers and clothes straighteners, and Brady once employed a woman camera operator. They did most of the exacting and laborious handwork that went into Brady's pride and joy—his composites.

Brady liked to show important groups—committees, cabinet members, visiting royal parties—but when the group was too large to pose all together or it was impossible for its members to gather at the same time, Brady would photograph them individually and then go to tedious lengths having prints made in scale, cutting out the figures, stuffing them into a "scene" and then retouching so that the figures seemed to have been actually photographed together. Alexander Gardner scorned these composites, claiming they took so long to produce that the reason for doing them was passé before the final version could be put on the market. But Brady persisted in making them, even though they started to lose money.

Gardner always insisted that it was he and not Brady who first thought of covering the Civil War. When the war started, he followed Brady into the field to help him record some of the early battles. But by the winter of 1862 Gardner had become fed up with Brady's constant presence in Washington, and also he objected to the fact that Brady would not credit him with the war views he had taken. So Gardner quit and for a few months worked for the Army of the Potomac before opening up his own Washington gallery. Soon most of the fine war photographers who had started out working for Brady were in Gardner's employ. This did not seem to deter Brady. "Operators" were expendable—there were always replacements around.

One of the most interesting—and interested—patrons of Brady was Mark Twain (p. 64). The Civil War was six years over and Brady's career was on the decline when the great American humorist visited the Washington gallery. After studying the vast collection of memorable faces hanging on the walls, Mark Twain told Brady that if he only had the time, he would have liked to form a partnership to exploit these treasures. Fortunately, enough of those treasures still exists to give evidence of Mathew Brady's greatness.

Brady's fame, after all, rested to a great extent on his Lincoln pictures. This one was taken in 1864 with his youngest—as well as favorite—son Tad.

Sir Francis Beaufort portrayed as he was in later years. His meticulous surveys and his subsequent administration of the British Admiralty led to the expression "safe as the Admiralty Chart."

By Alfred Friendly

Admiral Beaufort charted coasts for ships of the world

Decorating his work with sketches and dabbling in archaeology on the side, he devised standard wind force scale

If, after Trafalgar, there was no longer any dispute about who then ruled the waves, the troublesome fact remained that Britannia was still lamentably ignorant of enormous stretches of the world's shores on which those waves broke. The continents, save for the polar regions, had been coasted by British and other navigators and their general outlines were known. But except for parts of the Mediterranean and the bounds of the North Atlantic, no continent had been charted with the precision needed for colonialization and trade. As late as 1830 there was, in the words of a latter-day British hydrographer, "scarcely what could be termed a correct chart of any portion of the globe."

Inevitably the vacuum was filled and the British took the lead. Beginning about the third decade of the 19th century, a monumental period of cartographic enterprise ensued. For its first 25 years this age of mapmaking was presided over by an Anglo-Irish parson's son, Captain (later Rear Admiral) Sir Francis Beaufort, an officer of surpassing skill and talent whose name is still revered by every hydrographic professional and sadly neglected by almost everyone else. Even most sailors identify him, if at all, as the inventor of the "Beaufort Scale," the international measure of wind force. Valuable and universally used as it is, it was by no means the greatest of his achievements, nor does it adequately reflect his services.

Beaufort became Hydrographer of the Admiralty in 1829, when he was 55 years old—the age, ironically, when by regulation present-day Hydrographers are obliged to quit that post. He remained in charge for more than a quarter of a century, longer than any man before or since. He converted what was until then a dull chart depot into the finest cartographic institution of its time. The standards he set made the Admiralty Chart into a creation of beauty and renown, a byword for accuracy. "Safe as the Admiralty Chart" was for years a British simile for reliability.

But many years before he performed the services that leave every seafarer in his debt, Beaufort conducted one of the most interesting—and expert—surveys in the annals of the British Hydrographic Office. It was not merely the charting of an unknown coast, but also a voyage of fascinating archaeological discovery.

Remarkably, as late as the first decade of the 19th century no British ship had sailed the 400-mile stretch of the south coast of Turkey, from a point opposite Rhodes to Syria. No reliable chart of it existed. Yet in

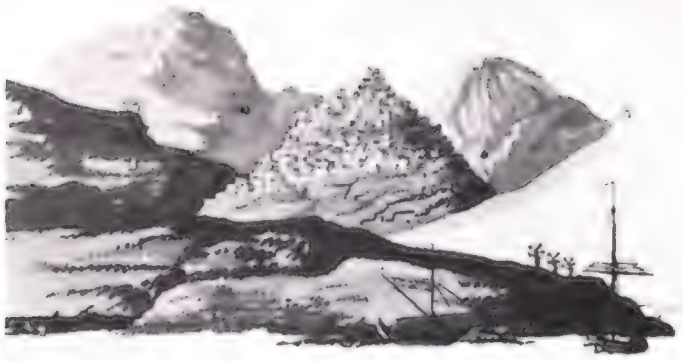
Alfred Friendly wrote about Philae in SMITHSONIAN, *February 1976. His biography of Beaufort, will be published this month by Random House.*

The Beaufort Scale

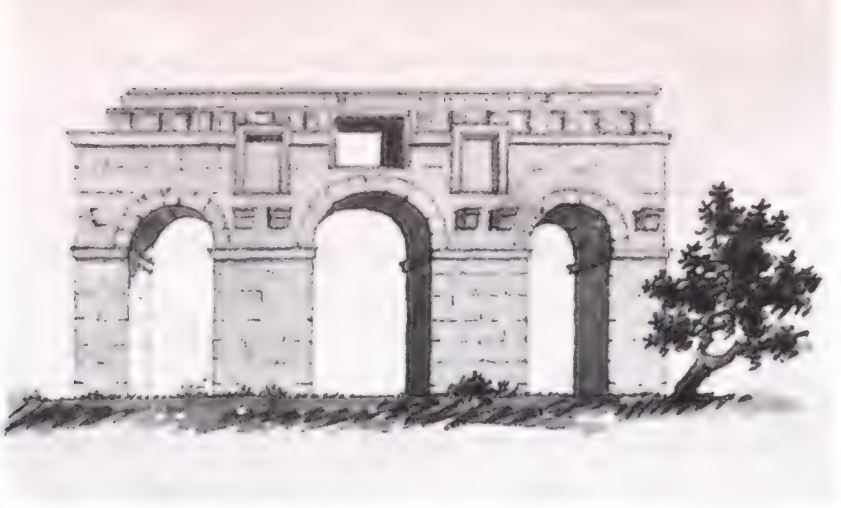
Today, Beaufort is well known by yachtsmen and professional seamen for the Beaufort Scale of wind force. Here, copied from his journal in 1806, is Francis Beaufort's first recording of that scale and of why he originally thought of it:

Hereafter I shall estimate the force of the wind according to the following scale, as nothing can convey a more uncertain idea of wind and weather than the old expressions of moderate and cloudy etc. etc.

0 Calm	7 Gentle steady gale
1 Faint air just not calm	8 Moderate gale
2 Light airs	9 Brisk gale
3 Light breeze	10 Fresh gale
4 Gentle breeze	11 Hard gale
5 Moderate breeze	12 Hard gale with heavy gusts
6 Fresh breeze	13 Storm



Turkish hill town is typical of Beaufort sketches that grew from elevations on charts.



Beaufort's interest in archaeology led him to sketch such ruins as the north gate at Patara.

classical times it had been the highway to the rich Roman provinces of Lycia, Pamphylia and Cilicia, and in Beaufort's time it flanked the increasingly important route to Cyprus and the Levant. It was known also, from Herodotus on, to have been studded with great Graeco-Roman cities.

British antiquarians were as eager as the Admiralty for the impenetrable Ottoman curtain to be drawn aside. The Sultan, his policy gradually turning away from the French to the English, granted a permit for a voyage in 1811.

Beaufort, a newly made captain, by then acknowleged as the Navy's best cartographer, commanded the 32-gun frigate *Fredericksteen* at Smyrna. He was detached from his duties of chasing pirates and French contraband (at which tasks he had been notably successful) and ordered to carry out the needed survey of the Turkish coast.

The mission was conducted during the two summers of 1811 and 1812 and resulted in the production of Admiralty charts that remained authoritative for more than a century. As late as the 1950s, revised charts, corrected in only minor details, still credited Beaufort for the basic data; even today's sheet of 21 harbors and anchorages on the coast uses Beaufort's original plans for 18 of them. His 11 basic charts, completed in 1815 when he returned to England, were so exquisitely drawn that they went directly to the copperplate engraver without the intervening hand of a draughtsman —something that had never happened before and seldom has since.

Two years later, Beaufort published a narrative of his voyage in a book he entitled *Karamania*, the name of the southern Turkish province in Seljuk-Ottoman days (he refused to accept royalties on it, asserting that the data had been gathered while he was in His Majesty's service). It was an immediate success, written in the best tradition of early English travel narratives; it remains today (if you can lay your hands on a copy) the most charming *vade mecum* ever written for a seaborne traveler along that coast.

From that publication and, even more interestingly, from the personal journals and letters he wrote at the time (now safeguarded with 2,000-odd other letters and papers in the Francis Beaufort Collection in the Henry E. Huntington Library, San Marino, California), comes the fascinating story of what he found along that coast.

Beaufort hit archaeological paydirt on his first landfall, Patara, more or less opposite Rhodes. The old city with its fine theater and magnificent triple-arched gate, still a delight to today's visitors, had been lost to European ken for almost a millennium. There and from then on, Beaufort sketched furiously, copied hundreds of inscriptions (mostly Greek, but some Latin, Arabic and Armenian) and set about trying to identify the ancient sites he encountered.

Much to his later chagrin, he had adamantly resisted learning Latin and Greek as a schoolboy, although he could puzzle out the Greek letters. He had for help only a hand-written translation of the pertinent chapter in Strabo's geography (c. 7 B.C.) and the efforts of his interpreter, a Turkish-speaking Greek who seems to have had some classical background. His other officers were of no scholarly assistance and the local pilot was worse than useless. Beaufort wrote of him in his journal that "to the prevaricating subtlety of the Greeks he adds the brutality of his native country and, what is infinitely worse in my eyes, or rather my nose, is that he smells like a soapboiler's shop."

Identifications still good today

Considering the paucity of Beaufort's classical resources, what is remarkable is the accuracy of the identifications he made on the spot, some from inscriptions and the rest from Strabo's indications. Of some 60 geographic features along the stretch from Antiphellus (today's Kas) to the Gulf of Iskenderun (Alexandretta in Beaufort's time)—cities, rivers, capes and bays—which he identified with their classical names in his journal and on the map prepared for his book, today's best classical map of the area finds him wrong in only seven cases, giving different identifications for four and omitting three that he postulated.

Some years before, Beaufort had been first lieuten-

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ant on the frigate that conveyed Lord Elgin to Constantinople. In company with that great looter (or salvager, depending on your point of view) of the Parthenon marbles, he visited his first classical site in the Troad. Back then he confessed that he lacked the true antiquarian spirit.

He began to acquire it, however, almost from the moment when he became a discoverer in his own right. And, like every visitor to a ruined piece of antiquity, he wailed at the destruction wrought by time, weather and the natives. With respect to the last, he expressed a deal more sympathy than he did toward European plunderers whose depredations he had seen elsewhere in the Mediterranean. At Patara he wrote in his journal some words that today's tourists might well take to heart: "At every step we took, I heard some of my companions exclaim: 'What barbarous Greeks are those Turks! See their sarcophagi a prey of their cupidity. Look at those columns and temples, trampled under their prophane feet or carried away to build their hovels!'

"But I should like to know what nation could resist the temptation of jewels or money buried with the dead, and if the Turks, ignorant of history and taught to despise the learning, the taste and the monuments of all other religions than their own, are so culpable in converting the remains of ancient buildings to their use or convenience, what shall be said of those who, educated in the highest veneration for the ancient Greeks and Romans, rob, pillage, break and steal away their most valuable fragments, to gratify a momentary whim or childish caprice?

"What shall be said of an English Nobleman [*i.e.* Lord Elgin], availing himself of his situation as Ambassr. at Constantinople, to plunder Athens of its most beautiful remains. . . . How selfish of all these travelling gentry thus to deprive others of seeing on those sacred spots what gives them their value. . . . It would be more becoming if the rich and noble of Europe were to join in subscriptions for renting the ruins of Athens from the Grand Signor, where they might . . . employ their idle persons and plethoric purses in . . . replacing the fallen columns, and preserving the tottering temples from yielding to the hands of time and European robbery."

From Patara Beaufort pressed eastward, bemoaning the little time he could spare to explore sites that he was the first European to see for centuries—the Lycian tombs at Antiphellus, the great Roman granary at Andriace, the mosaics at Olympus, the lovely harbors and aqueduct at Phaselis, the eternal flame of Mount Chimera (still burning today)—because of the prime necessity of being in the *Fredericksteen's* boats from dawn until dusk taking bearings and soundings of the rugged coastline.

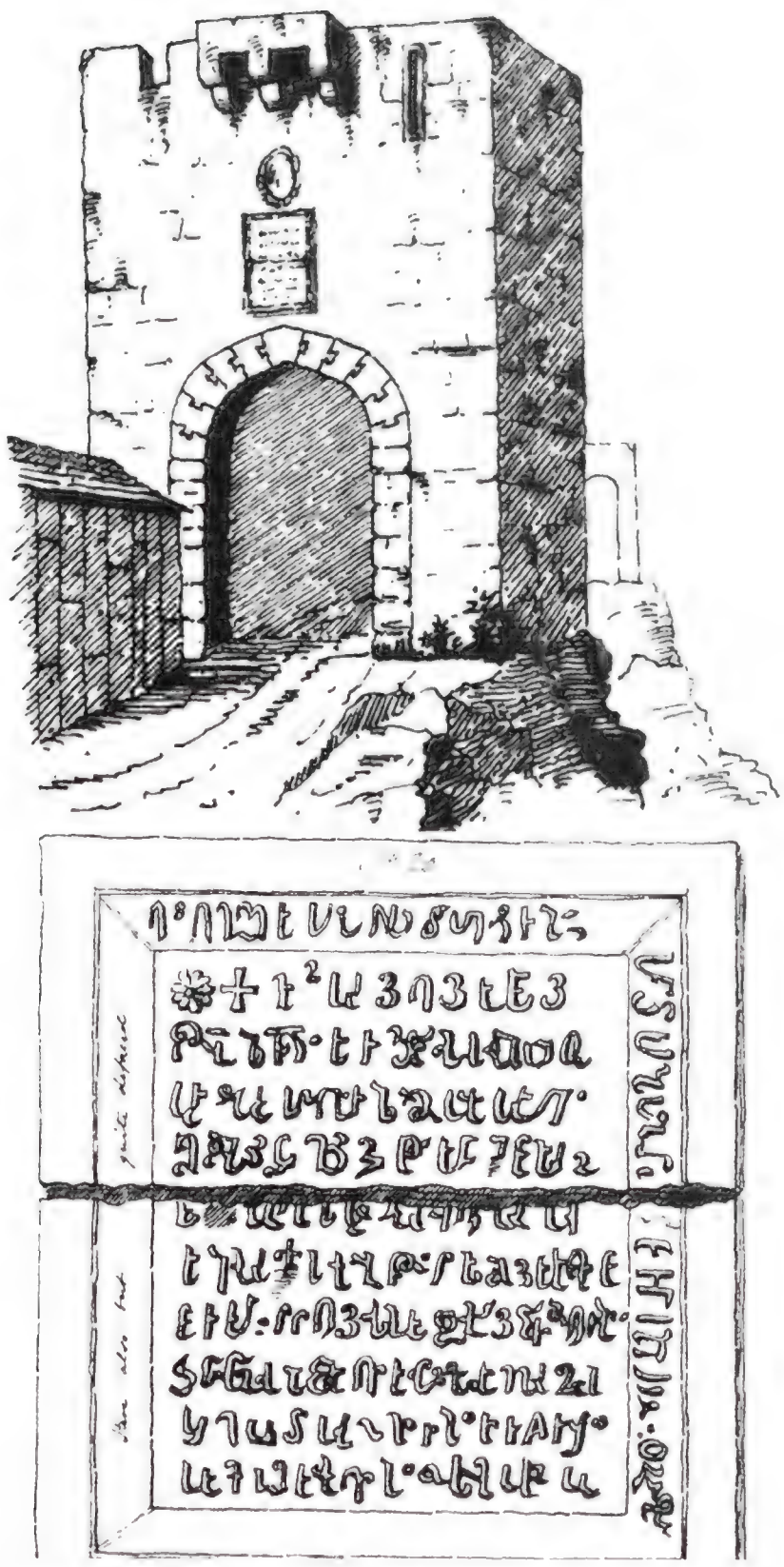
A few miles from ancient Adalia (today's Antalya), Beaufort paused to make celestial observations from a tiny island. An occultation of a star by the moon and a lunar eclipse were imminent; his observations of them were essential to fix his longitude. But clocking the rhythm of the eternal spheres was blocked by the murderous follies of man.

Gunfire erupted from Antalya; a few hours later, occupants of a small boat, which anchored nearby, told the story: a coup had been attempted against the ruling pasha but was being repulsed. The next day a group of the defeated rebels, numbering about 60, begged for succor. Granting it would put an instant halt to surveying the rest of the pasha's domain. Moreover, as the harried Captain observed in his journal: "The Turks are quite barbarous enough without the additional ferocity incited by civil commotion. Besides, both parties would probably annoy us; one would beg for powder, the other for ball; the weakest would seek refuge on board, the victor would claim his prey. In short, I might embroil myself . . . and last and worst commit the flag."

"I have never for a moment repented it"

The prediction was accurate but the resolve was short-lived. The defeated group had no hope of escape: the mountains were close to impassable and in any event controlled by the pasha's headmen; a caïque drifting by unmanned was useless since none of the party could sail it.

Half of them took refuge aboard nevertheless; the other half stayed on shore. Next morning the pasha's pursuing vessels appeared offshore and his cavalry approached by land. In vain Beaufort negotiated with their emissaries, who demanded that the rebels be turned over.



Citadel gate in southern Turkey was sketched in 1812. Beaufort also copied Armenian inscription.

Beaufort's frigate was greatly superior to any craft the pasha could put against him. The Captain could protect the fugitives, but only by taking them aboard and carrying them off. This meant that he must forsake his official duty.

"This was the critical moment of the wretches' fate [he wrote]. 30 of them on shore, and 30 more in the caïque would be in less than an hour headless, without any chance of escape except through me or through a miracle.

"I confess I was barbarous enough to try to reason myself into a confirmation of my resolution to abstain from any interference.

"But I thank my God that those calculating cold-blooded arguments kept possession of my mind for a very few moments. A more generous batch succeeded them. . . . I have never for a moment repented it and shudder at the bare possibility of my having decided otherwise."

Beaufort dismissed the pasha's negotiators, embarked the 60 rebels and sailed away, putting them ashore at Cape Kiro and Kos, in the Aegean, a few days later. On that exciting note his surveying came to an end for that year.

There were, happily, no repercussions either from the Sublime Porte or from the Admiralty. When Beaufort appeared again at Antalya in the spring of 1812, to continue the survey, he was received frigidly and barred from entering the walled city, but permitted to resume his charting. He pushed steadily eastward, rediscovering Side, the pearl of the south-coast cities. For a week he sketched its ruins and made a calculation of the theater's seating capacity, 15,240, which no one has ever attempted to better. He rejected—with horror, we may assume—an offer of 2,000 piastres from the headman of a nearby town for a midshipman who had caught his fancy.

Measuring, sounding, charting, copying inscriptions and puzzling out identifications, Beaufort worked his way on to Alanya (ancient Corakesion) with its magnificent Seljuk fortress, Silifke (ancient Seleucia), Soli, Tarsus and a dozen other classical sites, until the voyage ended in the Gulf of Iskenderun. On shore with working parties, Beaufort was attacked by brigands. A midshipman was killed and the Captain himself received a bullet that shattered his hip. His life was despaired of for weeks during the ship's return to Malta. Somehow he survived, buoyed by the knowledge that he had completed his survey.

From the sea he turned to science

By the time Beaufort had recovered, returned to England and completed his charts and book, the war with Napoleon had ended. He never went back to sea. For more than a decade he tried his hand, without much success, in a series of business ventures. During that otherwise dreary period, he involved himself increasingly in scientific pursuits. Elected a Fellow of the Royal, Royal Astronomical and Royal Geographical Societies, he worked actively in their affairs with the outstanding astronomers, geographers and other "savants" of the period, including Babbage, Herschel, Airy and Rannell. His reputation grew, and when the office of Hydrographer fell vacant in 1829, Beaufort was the obvious choice to fill it.

Some tens of thousands of items from his correspondence and memoranda show how his guiding hand and character revitalized British hydrography. With an average of a dozen survey ships at sea every year, Beaufort's officers painted the first coherent panorama of the world's coastlines. In hundreds of individual portraits, they put flesh and features on what had hitherto been for the most part mere skeletons. During Beaufort's benign but exacting reign, almost 1,500 new charts were issued, Beaufort personally working over each one to ensure that it met his exacting standards.

Although his formal education had ended when he was 14, Beaufort had made himself into a competent astronomer and a pioneer in the infant sciences of meteorology, oceanography and terrestial magnetism by his own study and reading in the crowded and rowdy cockpits and gun rooms of frigates—where John Masefield later declared that study of any kind was impossible. Thus, when the seagoing scholar at last became director of an organization that had the funds, the ships and the equipment for research and experimentation, Beaufort acted as the eager instigator and skillful supervisor of most of the great British investigations into tides, currents and magnetic and gravitional variation conducted between 1830 and 1855.

There is no better testimony to his indispensability than the fact that in 1854, when he was 80, deaf, in miserable health and wracked with pain, the Admiralty refused to accept his resignation. The Crimean War was impending and his desk was piled high with charts of Russian waters to be rushed to completion. He held on another year.

A turbulent career at sea that had begun with a shipwreck off the Sumatran coast when he was 15, that continued on Navy frigates fighting a score of bloody encounters with the French during the Napoleonic War—climaxed by his capture of a fine Spanish polacre during which he received three saber cuts and 16 slugs from a blunderbuss fired at point-blank range—ended peacefully. He died in his sleep in 1857, in his 84th year.

"Everyone has his hobby or insanity," Beaufort once wrote to his family. "Mine is, I believe, taking bearings for charts and plans." Few hobbies or insanities turned out to have more productive results than his.

Map of the Turkish Mediterranean coast contains scores of tiny notations by Admiral Beaufort. These and his sketches of headlands and harbors were synthesized into his Admiralty charts.

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The above list of contents is by the limitation of space just a mere summation. The actual content of *Gray's Anatomy* is so massive that the table of contents in the book needs 16 entire pages with 1,932 separate category entries. And the index of this masterwork covers 41 pages with 8,541 separate listings.

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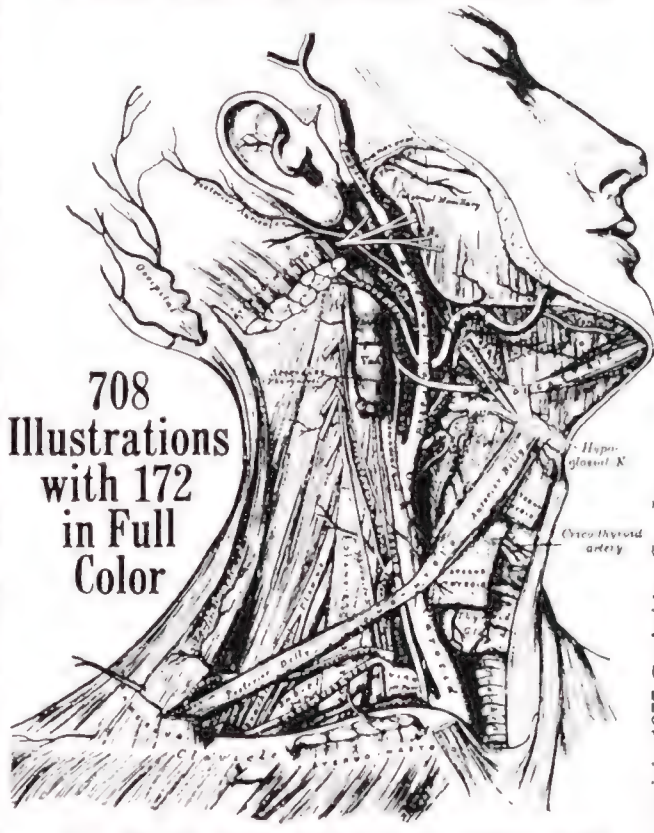

Fig. 283—Surgical anatomy of the arteries of the neck, showing the carotid and subclavian arteries.

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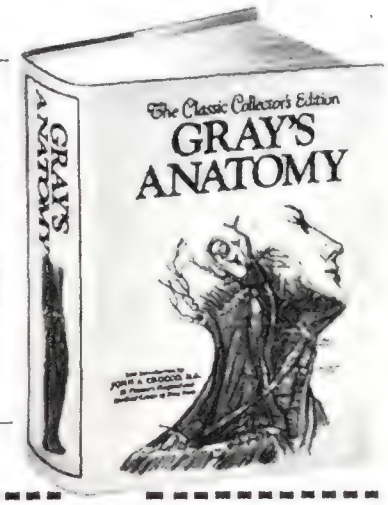

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By Edward P. Morgan

Wilson Center immerses scholars in think tank

Along with its Kennan Institute, a hotbed of Kremlinology, it attracts savants from everywhere to the Smithsonian castle

Twice a week Woodrow Wilson scholars gather in their balconied library for noonday discussions

Five score and 13 years ago—the same year that Karl Marx founded the first International Workingmen's Association in London and New York, and Tolstoy was writing *War and Peace*—Abraham Lincoln climbed up to the Smithsonian Institution's "castle" tower room and watched Union soldiers practice lantern signals during the Civil War. He would not recognize the scene today. Instead of a barren space scarred by an open sewer and railroad tracks, the Mall is a museum-lined greensward from the Capitol to the Greek temple raised on the Potomac in Lincoln's memory.

There are other changes. Below where Lincoln stood in the castle, a select group of men and women is flashing different signals: the cerebral vibrations of scholarly research. The seven-year-old Woodrow Wilson International Center for Scholars is a special place, an institute for advanced study created by Congress as an independent "living memorial" to the 28th President. Famous research centers have flourished for centuries from Cambridge to Kyoto. The Wilson Center is a different kind of think tank; it is both an ivory tower for working scholars and an intellectual crossroads, where politicians, journalists, and labor and business executives meet to discuss man's dilemmas, old and new. Its first chairman was Hubert Humphrey; its trustees, appointed by the President, include the Secretary of State and the Librarian of Congress.

Its 48-year-old director, James Hadley Billington, who has combined serious historical scholarship with forays into popular writing (for *Life* and *Newsweek*), says, "Washington has had enormous growth on the cultural side during the past 10 or 15 years. And we're part of that. We're a catalyst and a stimulant, history-minded, but closer to politics and policy than, say, to art and the ballet. The Center's charter is nonpolitical. It's a place where the world of ideas can interact, on neutral ground, with the practical world of public affairs. The confrontations are healthy for both sides."

Essentially, says Billington, "I'm a scholar. I've been one all my life." Credentials: Princeton BA in 1950; a Rhodes scholar at Oxford where he earned his PhD; taught history at Harvard and Princeton; a Fulbright professor at Helsinki and a guest lecturer in both

overseen by a bust of the President for whom the seven-year-old international center is named.

Leningrad and Moscow. He wrote a book on Russian populism at age 26; *The Icon and the Axe,* a history of Russian culture, at age 37; and is now busy at night on a book on 18th- and 19th-century revolutionaries.

By design, Billington notes, most of the Center's Fellows, chosen in international competition, are working in the castle on a broad range of individual studies. "We look for the scholar who seeks tentative answers to important questions, not those who provide definitive answers to trivial questions. We do no group or team research, and no classified or contract research. Nor do we emphasize faddish 'relevance.' "

However, with Billington's encouragement, some specialization has begun to develop at the Center. Most recently, a Latin American program—four or five scholars a year plus special seminars—has begun under a "lead scholar," Abraham Lowenthal, formerly of the Council on Foreign Relations. Sam Wells, a young historian from the University of North Carolina, is planning a similar effort in the field of postwar U.S. security policy. Three or four other smaller "clusters" of activity are contemplated.

Already in full operation is the Center's most important offspring, the Kennan Institute for Advanced Russian Studies. It is a natural outgrowth of Billington's own scholarly interests and his friendship with

Photographs by Yoichi R. Okamoto

Kennan Institute's Fred Starr, at right,
is off-hours clarinetist in a jazz group.

George F. Kennan, the celebrated Kremlinologist and former ambassador to Moscow. Kennan moved south temporarily from the Institute for Advanced Study in Princeton to help launch the venture, which has already attracted 19 specialists, both foreign and American, to the castle for extended study, discussion and writing. Kennan himself has continued to play a major role; he is head of the Institute's academic advisory council, he helps to raise money and, as a Center Fellow in 1975, he worked on a book on the origins of World War II.

Thanks to Washington's mother lode of source material, ranging from the archives of the Department of Agriculture to the Library of Congress, the scholars at the Kennan Institute can probe perhaps more deeply than most academics into the Russian puzzle that Churchill called "a riddle wrapped in a mystery inside an enigma."

"The Russians," says S. Frederick Starr, who resigned as an associate history professor from Princeton to direct the Kennan Institute, "would love to get their hands on the Library of Congress' huge repository of material," not to mention other treasures such as letters of Catherine the Great in the Walters Gallery in Baltimore and the New York Public Library's archives on the industrialization of the Urals.

Starr actively seeks out Soviet scholars as full-time Fellows, along with American and other Westerners. Whenever he and Billington travel, they try to interest scholars in the Institute's program, always with the knowledge that every Russian they want will have to get top-level clearance to go to Washington. They also insist that every Russian apply through the annual open competition for fellowships, as all the other Fellows must do. Russian poet Andrei Voznesensky arrives in October as a guest scholar. Starr hopes to assemble Soviet and American scholars at a 1978 conference on "Russian America" (in collaboration with the American Historical Society) in Sitka, Alaska, where the National Park Service has discovered and preserved whole villages built by the Russians before Secretary of State William H. Seward bought them out in 1867.

Starr's own budget is about $300,000 a year, stemming from private donations, some limited government funds for special projects and corporations anticipating more trade with USSR. Starr stresses, however, that the Institute is not turning out recruits to work for American business.

But why the Institute?

Moved by the deaths of three towering Soviet experts—Llewellyn Thompson, Charles Bohlen and Merle Fainsod—Kennan reviewed with other American Sovietologists ways to continue to develop expertise in the field. Their availability was sharpened by the fact that Russian studies had been living largely on Ford Foundation grants and government funds, which were beginning to dry up.

At that meeting in May 1972, the very month "detente" entered the Washington-Moscow lexicon, Starr and Associate Bruce Boisture presented a survey on the problem of Russian studies. It drew a disturbing picture of the United States' lack of preparation for widening or deepening its understanding of the other superpower just as their relations supposedly were entering a new phase.

"Three-fourths of the alumni of the BA language

Edward P. Morgan, former Washington radio and television commentator, now is a free-lance author and lecturer in McLean, Virginia.

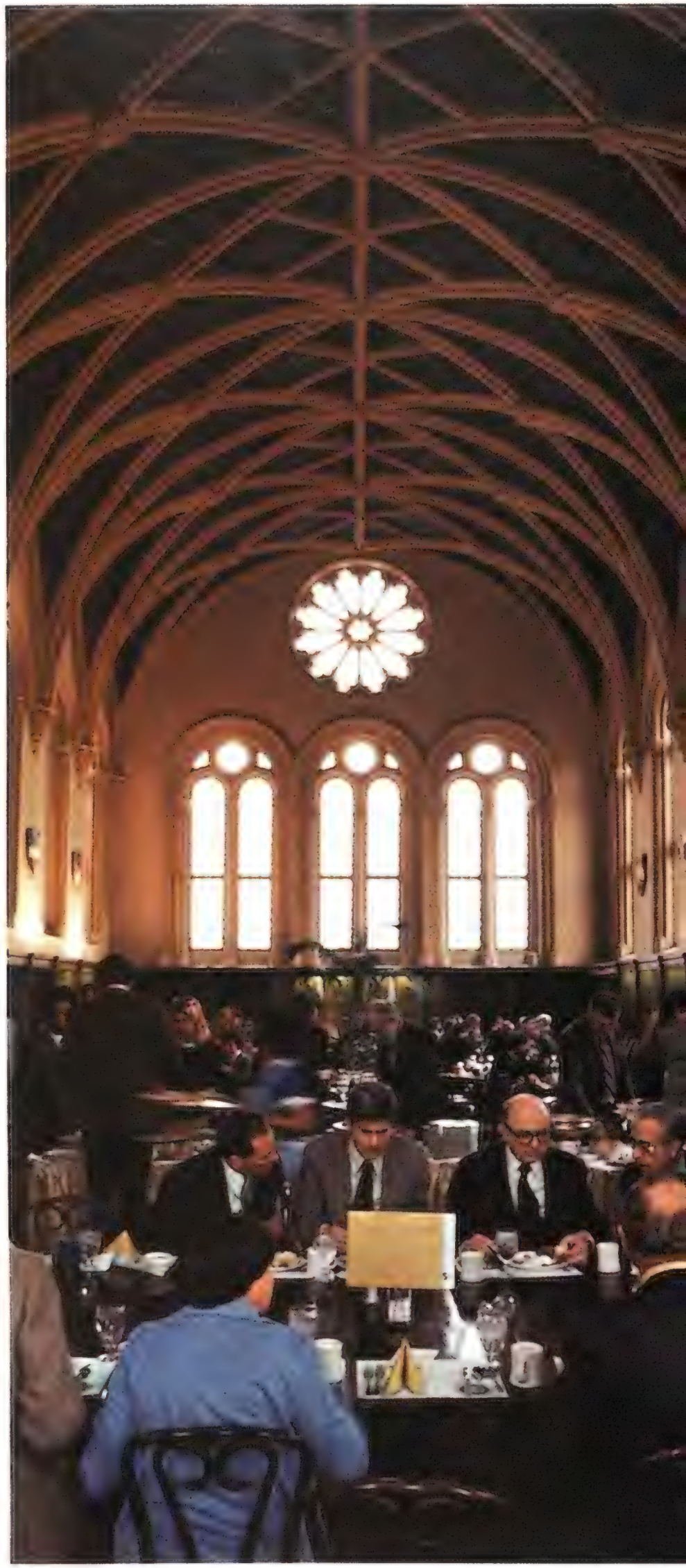
George F. Kennan, ex-ambassador to USSR, left, with visitor W. Averell Harriman.

program at Indiana University," they discovered, "are employed in posts which do not tap their Russian skills, while half of the 375 alumni of Boston College's MA program are now working in banking and industry. . . ."

Starr says the situation is worse today. After Sputnik jolted us into the space race, the United States began turning out Russian scholars almost on an assembly-line basis. But of the 2,000-odd PhDs produced, not only did many go into other pursuits, some are actually unemployed. In the last decade, Starr believes, the Russians "have done a lot more to inform themselves about the United States than we have about them." Today there are not more than 4,000 people in the entire country studying Russian at an advanced level. Kennan, Billington and others were disturbed by the prospect: as the power (and problems) of the Soviet Union grew, our potential to understand both were shrinking in inverse proportion. That was enough impetus to start the Institute.

When Billington became director of the Center in 1973, he felt it would be a good place to set up a special program in Russian studies. "I advanced the idea of institutionalizing the international part of the Center. I thought a good means of doing this was to begin with our most important continuing international problem, since we already knew that there was a decline in Soviet studies."

Starr hopes that many of the 2,000 PhDs scattered from UCLA to Grinnell will be qualified for and attracted by the Institute. But, he warns, "it is all but impossible to measure what you get from your money." He is determined, however, to make the Institute productive. He has begun by commissioning a sort of road



Scholars and their guests, such as Dean Rusk, at right, lunch in vaulted Commons of the castle.

Gloria Steinem, a founder of *Ms*, joins the Center in the fall to do a book on feminism in politics.

map for scholars, to be published this fall by the Smithsonian Institution Press. It is a 300-page guide to source material on the Soviet Union in Washington. The Public Health Service National Library of Medicine, for example, has a rich collection of Russian biomedical and social sciences, dating back to pre-Revolutionary Russia. Such data have never been correlated.

A harvest to combat a hang-up

What will the harvest be? "From our full-time Fellows," Starr says, "we expect books, and at least learned articles from our shorter term people," all to swell the inadequate main stream of U.S. knowledge about the Russian mystery.

To Starr, Americans have an unnecessary hang-up about the mystery.

"Our perceptions of the Soviet Union," he observed recently, "are terribly subject to faddism. They swing between gross exaggeration and underestimation of Russian strength and achievement. The Russians are regarded as being either two feet tall or ten, instead of, say, five feet eight."

Both Starr and his wife Nancy hail from Cincinnati. He plays a mean clarinet and recently with five friends, "appointed for life," organized the Federal Jazz Commission which, according to its handsome colored poster, is "prepared to stage raucous public hearings at parties, dances, funerals, installations, impeachments, lodge meetings and other such convivial occasions. As is customary, members . . . prefer to be remunerated for their efforts, even while serving out of love for the commonweal."

Nancy Starr plays the cello. They both play in chamber music groups. In 1971, Starr drove his wife and baby daughter (they now have two girls) from Frankfurt to Leningrad in a Volkswagen bus and ran a school car pool after they arrived. He studied a year at the University of Leningrad. He "backed into" Russian studies after an archaeological study in Turkey. He studied Russian at Yale, won a Master's at King's College, Cambridge, a PhD at Princeton and has visited the Soviet Union at least half a dozen times since the early 1960s.

Starr wants the Kennan Institute to build and maintain serious contact with important Soviet scholars and strengthen this field of studies, acting as a kind of "service industry" to bring interested people together.

This won't be easy, with the Kremlin's tight leash on some of its most distinguished citizens. But there are some encouraging signs. After his November 1975 trip, Kennan said he never encountered so many Russians so confident of themselves; they were much more capable of candor than a generation earlier.

The Institute's recruits are not quarantined on the

fourth floor of the Smithsonian castle. They mingle with the 35 to 40 other Center scholars at a common mess, at prelunch "sherry hours" where a senator speaks or a Fellow discusses his thesis, and at frequent "evening dialogues," beginning with tea, then a discussion on, say, "Are We Americans Repeating The Decline and Fall of Rome?" followed by a catered dinner and further discussions.

A Who's Who of scholarship

All in all, the Wilson Center's past and present list of matriculants reads like an International Who's Who. It includes Erik Barnouw, Columbia professor emeritus, who worked on his latest book on the sponsor's influence on television; Lincoln Gordon, a former president of Johns Hopkins University; Godfrey M. Hodgson, an editor of *The Sunday Times* of London; Brian W. Rapp, an ex-city manager of Flint, Michigan; Don Walsh, an ex-U.S. Naval Commander who holds the world's record in deep sea diving; a professor from Kyoto; an Australian law profesor; Ambassador Kennan; former Virginia Senator William Spong; ex-Ohio Governor John J. Gilligan; General Andrew J. Goodpaster, ex-Supreme Allied Commander in Europe (NATO); H.E. Zewde Gabre-Sellassie, an ex-foreign minister of Ethiopia; and Elliot Richardson, who after whirling through top government jobs like a man caught in a revolving door, is now President Carter's ambassador to the Law of the Sea conference, Gloria Steinem, prominent feminist and founder of *Ms* magazine, becomes a Center Fellow in September.

One Fellow who stayed on is Peter Braestrup, a veteran of *Time*, the *New York Times* and the *Washington Post*. As a Fellow, he finished up a 1500-page study of media coverage in Vietnam, entitled *Big Story*. Now he is the Center's editor, in charge of its new publication *The Wilson Quarterly*, which was launched in 1976. In some ways the *Quarterly* is a kind of intellectual *Reader's Digest*, but it is also much more, what Billington likes to call "the news magazine of the world of ideas."

The *Quarterly*'s upcoming issue, out in October and going to 85,000 paid subscribers, contains 45 pages of summaries of articles from specialized periodicals; three full-blown articles on changing patterns of how Americans get and spend their incomes; a revisionist critique of the Swedish welfare state; analyses of the controversial U.S. policy on SALT and arms control; some 35 thumbnail book reviews; and a discussion of Don Quixote's impact on Western literature by Carlos Fuentes, the Mexican novelist and a former Fellow. The *Quarterly*, Braestrup notes, could not work without the judgments, advice and suggestions of Wilson Center Fellows, but it is aimed primarily at spreading

James H. Billington, Center director, and wife, Marjorie, in a reception hall under the scholars' eyries.

the word among non-scholars about what the scholars and specialists are up to.

Before Watergate sank his administration, President Nixon replaced Hubert Humphrey as chairman of the Center's board of trustees with a Republican, William J. Baroody, who runs an organization called the American Enterprise Institute for Public Policy Research.

The Center began fiscal 1970 with a federal grant of $90,800 and $75,300 from private sources. For fiscal 1977 (ending in October), the budget is $1,140,000 from Congress. Expenditures total nearly $2,000,000, the difference coming from foundation grants and private contributions.

Unlike some enterprises, the Center is not hooked on growth. The number of fellows, who "cost" an average of $25,000 a year, may rise gradually to 50 from the present 35 to 40. But applicant pressure is mounting. Last time around, there were more than 300 applicants from 40 countries for 29 vacancies. People persistently ask, what does the public get out of the Center? As Fred Starr said of the Institute, it is almost impossible to tell what you get for your money. But like the Institute, the Center's most tangible products are books and research papers.

Center Fellows have published more than 50 books and the list is growing. George Reedy, now dean of the College of Journalism at Marquette University and author of a best seller, *Twilight of the Presidency* (which drew heavily on his experience as press secretary to Lyndon Johnson), wrote another book, *The Presidency in Flux*, while in residence. So did David Wise, *The Politics of Lying*. Neal R. Peirce began a series of regional social geographies, including *The Great Plains States of America*.

Gripes do surface in this academic paradise. The food (for which the fellows pay) is adequate but hardly Cordon Bleu. The Center has been cramped for space; its senior staffers, including Billington, must devote an inordinate amount of time to fund-raising.

There are larger outside flaws that worry any concerned scholar. A U.S. Office of Education study reveals 20 per cent of adult Americans are "functionally incapable" of coping with the complexities of today's society. College freshmen from California to Virginia have to be tutored in English, math and study skills.

A group of Woodrow Wilson Fellows, as scholars are called, in castle lounge. All studied here in the season just past. Academics and government people from 38 countries have been Fellows.

The head of Yale's graduate school deplores the dwindling interest in history. The Los Angeles County school board (among others) decrees that no high school diplomas will be issued without proof that the student can read and write.

George Kennan has little doubt about the significance of the Center's purposes. In his day, he told a group of Center supporters, there was no place in Washington "bringing together men of affairs with men of scholarly minds. . . . This Center is doing for the life of the intellect what the Kennedy Center is doing for the arts."

Some months ago, Kennan told a group of Slavic scholars meeting at the Kennan Institute:

"The fears and other reactions engendered by this nuclear rivalry have now become a factor in our relations with Russia of far greater actual importance than the underlying ideological and political differences. The real conflicts of interest and outlook, for all their seriousness, are limited ones. . . .

"Our first task, then, is to master, and to bring under rational control this fearful capacity for suicidal destruction that has been let loose among us . . . so terrible are the dangers of a continued failure to master it that we would be fully warranted in accepting very considerable risks to avoid this failure."

It is not difficult to sense in the Woodrow Wilson Center and in the Kennan Institute that a lot of knowledge is not a dangerous thing, and the sooner we acquire it the better.

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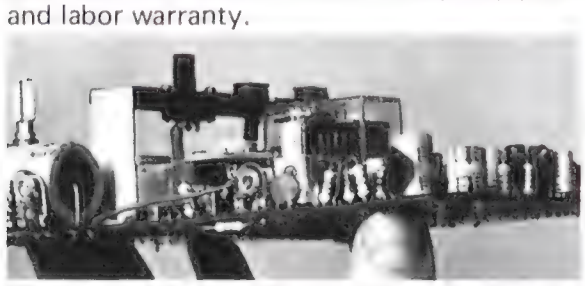
Forget about service If you've owned a telephone answering device for more than a year, there's a good chance that it's been in for service at least once. The Code-A-Phone, however, is solid state and built with the same heavy duty components used in commercial units. It should dependably stand up to years of heavy usage. (Ford Industries is the world's largest supplier of telephone answering equipment for the Bell system.) If service is ever required, there are over 200 authorized service centers plus a service-by-mail center. There's also a toll-free "Help-Line" number to call 24 hours a day for advice or suggestions, and your unit has a limited ninety day parts and labor warranty.



The entire printed circuit-board with its integrated circuits is easily replaceable and contains the "Brains" required to control the audio amplifier and tape transport system.

PLENTY MORE FEATURES

Code-A-Phone has a monitor feature—you can listen to the caller leave his message and pick up the phone to intercept the call. If you want to skip over a message on the tape, just tap a button and it fast-advances to the start of the next call. It has a selectable erase feature that lets you erase a specific message or the entire tape if you wish.

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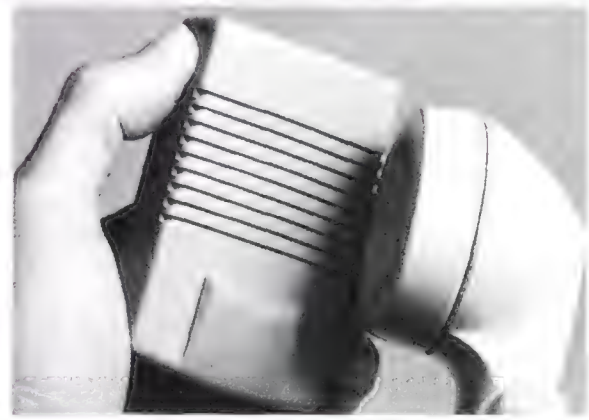
With other answering machines, you never know how many calls you receive until you play them back. With Code-A-Phone you have a call counter—a device that displays the exact number of calls you've received when you arrive home. If you now own another answering machine, you can really appreciate this convenient and exclusive feature.



Hold the small pocket-sized remote-control pager up to any telephone in the world and you can playback all your messages.

Code-A-Phone is the first really versatile answerer that works equally well at home or in the office. It's perfect for the busy or working housewife who spends little time at home. And, if she's home and just plain busy when the phone rings, she can always call back later without offending the caller.

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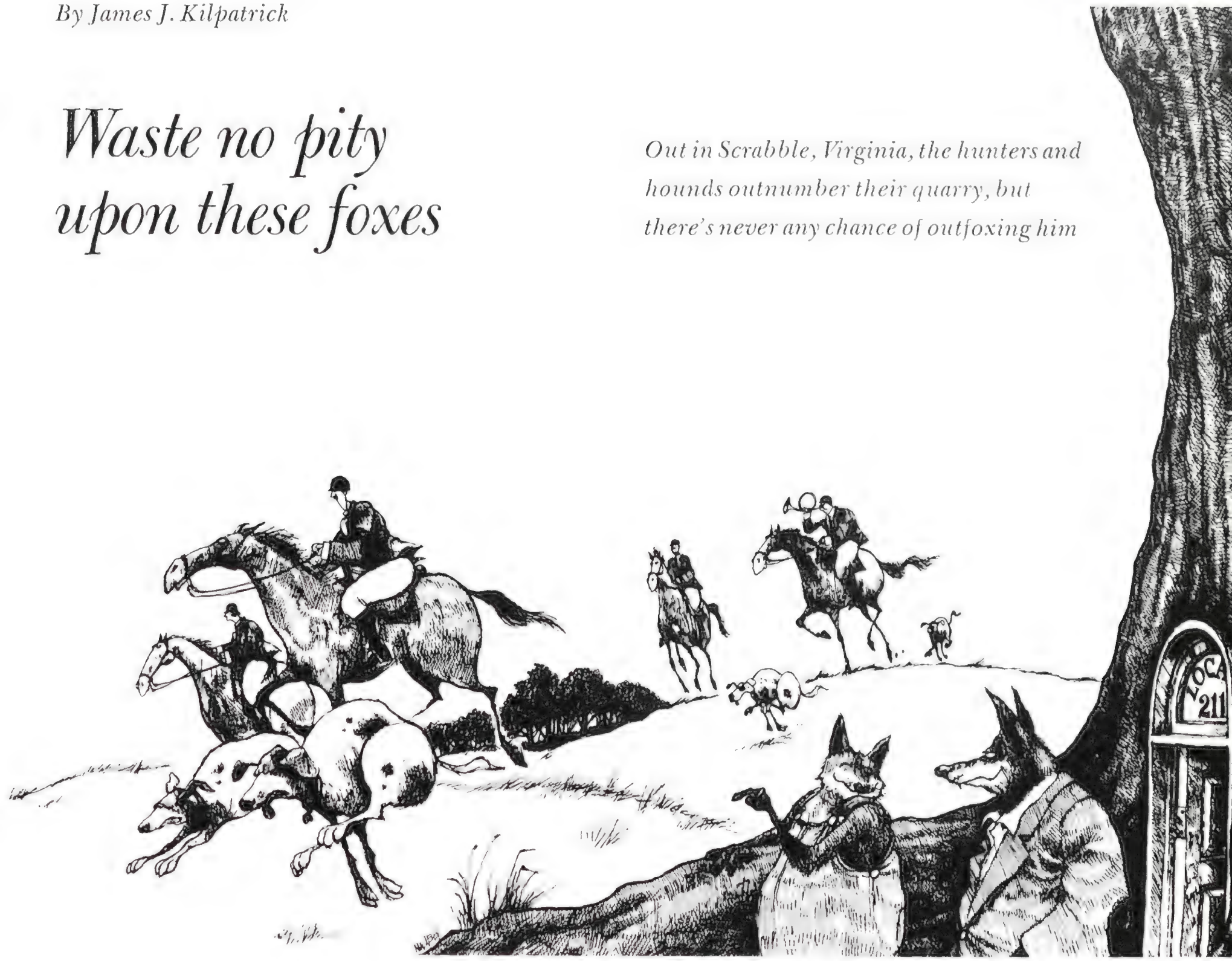
By James J. Kilpatrick

Waste no pity upon these foxes

Out in Scrabble, Virginia, the hunters and hounds outnumber their quarry, but there's never any chance of outfoxing him



The well-organized foxes are those who really enjoy the hunting phenomenon.

This is fox-hunting country, here on the slopes of the Blue Ridge Mountains. But those who hunt to hounds have learned to be wary of discussing their madness with the unenlightened; some stranger who Brakes for Small Animals is sure to start yelling brutality.

Whatever else the sport may be in precincts less humane than our own, it is positively not brutality here. There may seem to be something a little one-sided in the thought of one 15-pound fox being pursued by 26 hounds, one huntsman, two masters, two whippers-in and a field of 40 horses spurred on by 40 riders, especially when the putative object is not to eat the fox, but simply to kill the little critter. The appearances are misleading. The safest place for a fox in these hills is about 200 yards in front of the Rappahannock hounds.

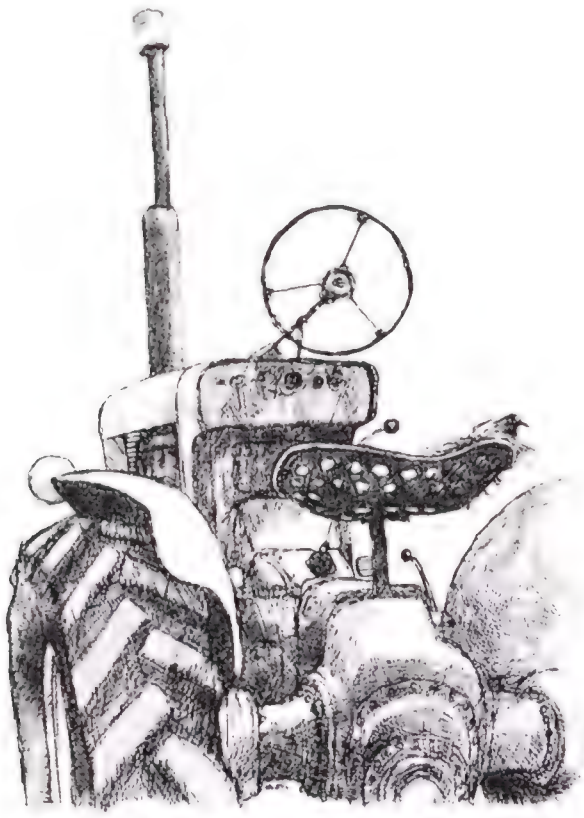
What has eliminated brutality, or so it is said, is the union contract. Fox hunting in Rappahannock, one is reliably informed, is strictly governed by an agreement between Local 211, Foxes Union of America and the Hounds Association of Northern Virginia.

Local 211 maintains an excellent pension and welfare fund and stays resolutely aloof from political strife. The Hounds Association of Northern Virginia (HANOVA) is held in equal esteem. It can be traced back to the original George Washington Hounds which hunted the mountains around Scrabble 200 years ago.

These civilized amenities cannot obscure the continuing relationship between the parties. It is an adversary relationship, and never can be anything else. In the current contract, the foxes agree to be hunted on Wednesdays and Satur-

days from October to April, not earlier than 10 A.M. or later than 2 P.M., with three ten-minute rest breaks to be called at the huntsmen's discretion. Each team is further entitled to four time-outs at its own request. A two-minute warning horn is to be sounded by the huntsmen before the chase begins. The hounds, for their part, agree to hunt "with diligence, but without lethal intention."

Grievances are taken to arbitration before the tripartite Society for the Preservation of Our Foxes, but grievances have been few and sessions of SPOOF are rarely convened. Indeed, the last such meeting occurred in 1963, when two high-spirited members of the Hunt by sheer inadvertance cornered a young fox, Red Mackenzie by name, in what appeared to be a shallow groundhog hole. Instead of ignoring the hapless Mackenzie, which common courtesy would have required, they leaped from their horses with wild halloos and chased the frightened fox into a hole on Little Battle Mountain. Then they dispatched a groom to ride down to Laurel Mills for four six-packs of beer, two shovels and a mattock, and they spent a hot afternoon trying to dig the fox out. Before they were done, they had a hole big enough to bury a Volkswagen in. By 5 o'clock they had run out of zeal and malt liquor alike. They threw 24 beer cans into the vast excavation and their disgusted mounts took them home.



Around Scrabble, you can't run a proper farm without a huffing, puffing tractor.

The infuriated Mackenzie emerged from the hole, smelling like Old Milwaukee, and took the matter at once to the grievance committee. The foxes' union complained bitterly that Mackenzie had suffered unspeakable trauma. The hounds' spokesman replied stiffly that his members had not participated in any way. An 11-day strike followed. The two chastened hunters sent a formal apology. Eventually tempers cooled, but there were hard feelings for quite some time.

Rappahannock is not all foxes, foxhounds and fox hunters, for other species are more numerous by far. Back in the fall of 1972, we ran into the considerable problem of Rosebud and Lord Macaulay. Skunks was their name, and socializing was their game.

The general rule at our place is that the collies may kill snakes and groundhogs, because this is their nature. My wife traps mice. I swat flies, but otherwise no one kills anything. The rule is live and let live. Here the rule works admirably for birds and animals alike, and when Rosebud and Lord Macaulay turned up, our first thought was that they too were entitled to Fifth Amendment protection, due process of law, assistance of counsel and all the rest. But they were, as I said —well, they were skunks.

Rosebud appeared toward the end of October, along a fencerow 100 yards from the house—black as a Bible, with a white-washed face and a white-tipped tail. She was grubbing away in the front field, minding her own business.

We could look out the back window and see Rosebud out for a stroll. Even when we didn't see her, we could, ah, detect her presence. Once, coming home from a good party, we nearly ran over her in the driveway. After that we drove the driveway ver-r-y slowly.

One evening in mid-November, we were coming home at twilight, ver-r-y slowly up the drive, and there was her gentleman friend. Back in September, son Kevin had built an umpire's platform for the tennis tournament, and sitting on that platform, regally enthroned, haughtily surveying the turf, was the noblest skunk I have ever seen.

Give a rabbit like this a "salad bar," and he will keep right on freeloading.

The pair took up housekeeping. Rosebud went shopping for linens and china. They brought in a Victorian sofa, a chest of drawers, a potted palm and a Hong Kong chest. Lord Macaulay took to sitting around the tennis court by evening, in white ruffled shirt and black velvet jacket, smoking a thin cigar.

But just before Christmas, Rosebud and his lordship went south to Madison County for the winter. When they returned the following spring, they moved into more spacious quarters a quarter-mile down the fencerow, and so far as I know, they live there quietly yet.

Skunks are not pests; they are at worst contingent perils, like obnoxious in-laws. By contrast, rabbits are truly pests.

To be sure, baby rabbits are mull-brown and round-eyed. But baby rabbits grow up to be juvenile delinquents. Then they graduate from teen-aged crimes to full-blown felonies. Rabbits cannot be appeased; they are insatiable.

Over the years, we have tried every technique of peaceful coexistence with the rabbit hordes. We built a Berlin Wall of chicken wire around the vegetable garden. They scorned it. They tunneled under the wall; they climbed over it rung by rung, like Marines up a rope ladder; they hurled themselves against the wall until they breached the barricade. And they laughed! Have you ever been snickered

From Mr. Kilpatrick's The Foxes' Union, *to be published in September by EPM Publications, Inc. Text* © *1977 Op Ed, Inc. Drawings* © *1977 Jeff MacNelly.*

The fox knows: why run from the hunt when you can just hide behind a tree?

at by 15 knee-slapping rabbits? Few sneers are more contemptuous.

We tried brotherhood. We posted hospitable signs: Rabbits Welcome Here. *Ici on parle lapin.* Two rows of lettuce were labeled "Salad Bar." The general idea was that if we took the fun out of felony the rabbits would grow bored; there would be no challenge, nothing but planned recreation and balanced nutrition. It was a bootless idea. The rabbits stopped laughing—that much was gain—but freeloaders can never be reformed.

They say that our autumns are like wine, here in the Blue Ridge, and the simile contains both truth and poetry. A truly great autumn, such as the autumn of 1972, is money in the bank. When the word goes out that our maples are brilliant crimson and the gums a burgundy red; when the oaks and hickories and persimmons turn early; when the poplars and white walnuts carpet the country lanes in gold—then the heart lifts up, and so does local trade. "Come sip our autumn," we say. "This is a great one."

One October two young ladies came to stay in the cottage over a weekend. They went down to the neglected apple orchard, to see if a few Yorks remained on the tree by the fencerow. They returned, quite forgetting the apples, with a basket of things: a sprig of sumac, pinot noir; goldenrod, chablis; white asters, pale dry champagne. They had gathered a tiny sassafras, its cane-headed root smelling of all the root beer ever compounded. They had leaves, grass, corn stubble, thistles; they had dogwood berries, black-tipped, red as traffic lights; they had pokeberries, persimmons, holly, running cedar, a mottled feather from a pheasant's breast. They tumbled their basket on an old pine table, and abruptly all of autumn occupied the room.

After Christmas comes the waiting time. It is pointless to hurry in the waiting time. There is no place to go. Beyond splitting and fetching firewood, few outside chores cry out to be done. After dinner, with the dishes washed, one thinks of Rupert Brooke: "These I have loved: White plates and cups, clean-gleaming." One does the small domestic things that mark the ritual hours; one watches the sparrows and juncos and quail. And waits.

There are books to be read in the waiting time and birds to watch and letters to write and puzzles to put together and loving humans to be loved. At sunset, one takes in the flags. They come to my arms in a burst of color, the flag of Virginia, the flag of my country, clean-cold, still breathing of the crisp air they have flown in. I fold them and put them away and return to the kitchen fire and waiting time. I once wrote after such a day that I had not earned a penny since morning, but I was richer than I had been the night before.

John L. Sullivan, the author's cat, hated the whole idea of leaving the city.

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September 30-October 2 **Wianno Club** Osterville, Mass.	November 18-20 **Sheraton at Fisherman's Wharf** San Francisco, Cal.
October 14-16 **Bald Peak Colony Club** Melvin Village, N.H.	December 2-4 **Rancho Bernardo Inn** San Diego, Cal.
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Around the Mall and beyond

Like every visitor to the trains down in the lower level of the Museum of History and Technology, my first reaction upon seeing the little Hawaiian steam locomotive on its painted pedestal was: How in the world did they ever get it *up* there? There it perches, roughly eight tons of it, seven feet or so above the floor, as though it had been engineered into place by the Baldwin Locomotive Works—which did indeed build the engine in 1883.

John White, curator of transportation, says that the little locomotive did not come through a removable window like its enormous cousin, the Southern Railway locomotive, which I will avoid calling the Jolly Green Giant. The little engine was trucked down a big ramp deep into the intestines of the building, from whence it traveled upstairs by freight elevator. It was moved across the museum floors on steel plates which were set in front of its wheels, then picked up from behind and rushed around to the front again—and again and again.

Finally, a sort of temporary bridge known as "cribbing" was built of ten-by-ten timbers, and the locomotive went inching out on this miniature trestle until it met the steel pedestal. It still was about a foot and a half too low, so jacks hiked it up to its small stretch of track. One push—and *voilà.*

This little machine was purchased by a sugar company in the then Kingdom of Hawaii. She was the third locomotive on Oahu and she was named *Puaalii.* I can't even pronounce it, much less report what it means. Perhaps her Hawaiian owners couldn't either, for they changed her name to *Olomana.* Presumably that was more pronounceable and even more trans-

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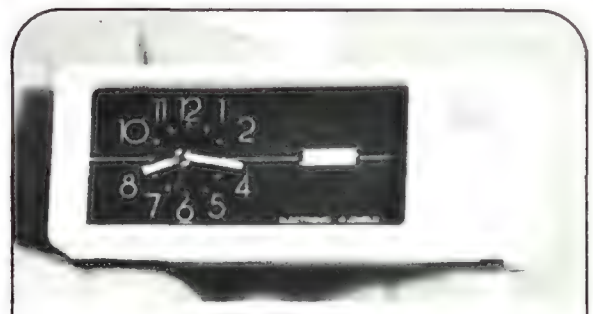

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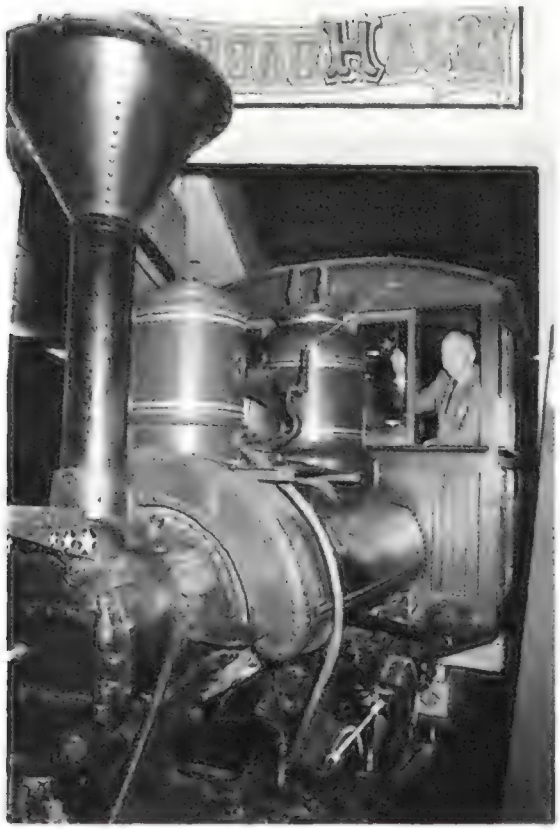

Olomana, Secretary Ripley at throttle.

latable to the natives, but scarcely to me.

Anyway, she spent years hauling cut sugarcane on narrow-gauge track. She chuffed around until 1944, when trucks took over her job. A California railroad buff saved her from the scrap heap, and she was restored and repainted.

Welcome to Valhalla, *Olomana,* or whatever your name is.

Little engines like this one were commonly used in industry from about a century ago until World War II. You saw them in quarries and mills and mines, and because they were an important industrial aid, the Smithsonian wanted an example. In other words, our curators seek out objects not just because they exist, but because they mean something.

Certainly we think of Indian arrowheads as being, if not exactly a dime a dozen, at least more or less familiar. So the sight of two of them—just plain old ordinary arrowheads—on display in a special exhibit at the Museum of History and Technology might have raised some speculation about what the Smithsonian was up to. All this talk about uniqueness of displays, historical significance and special meanings—and yet *arrowheads*?

Well, the special meaning is there, all right. These two comprised Maryland's rent to the British Crown, paid in 1957. It was a rent established by Charles I in 1632: Lord Baltimore got the charter

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to the land that became Maryland in return for two arrowheads and a portion of all the gold and silver found there.

This display is a very small part of a very good exhibit called "Silver Jubilee," which celebrates Queen Elizabeth's 25 years on the British throne. As for its uniqueness, Smithsonian is the only museum in America to be exhibiting documents and objects from the Queen's private collections in Buckingham Palace and the Royal Library at Windsor Castle. Highlighted are personal contacts, of one kind or another, between British royalty and their "cousins" in the former colonies: Victoria, before she was Queen, asked James Madison and John Quincy Adams to write her. They promptly did so, and you can read the letters. Then there was Victoria's submarine telegraph cable to James Buchanan—well, she was quite a pen pal. With memorabilia from royal and Presidential collections—things like charters, ceremonial gifts, paintings—the exhibit shows our long association with the Crown, most of it a happy one.

But I'm not happy about that rent of Maryland's. I live there now, and find myself guilt-ridden about loading the Royal Family up with decades of arrowheads. As for the quota of gold and silver, forget it, Elizabeth.

One of the results of the Silver Jubilee celebration is the silver medal which has been struck in England and put on sale in the United States. The idea is that the proceeds, above cost, will finance an exchange of fellowships for young American and British scholars to study in each other's bailiwicks. This magazine ran an announcement of the jubilee medal in June, and order forms are available at the exhibit. There are only 1,000 medals, so, as they say, step right up.

The Queen's profile appears on the obverse of the medal (that's "heads" for all you crude people out there), and since I have a long-standing crush on Queen Elizabeth (Around the Mall, September 1976), I am pleased to see it. I was pleased also to discover that the Queen's only daughter, Princess Anne, looks quite a bit like her mother. Anne came to visit "Silver Jubilee" and then "We the People," which is upstairs. I, being an inveterate royalty-gaper, arrived early and took up a position at the circular balcony around the Foucault pendulum.

Awaiting the royal entrance, downstairs, I read the placard that explains to

nonbelievers how the pendulum proves that the Earth really does spin. The pendulum moves back and forth pretty regularly, picking up little of the Earth's rotation. But the floor under it—plus all of us tourists staring at it—is turning, and the red targets that stand in a circle around the pendulum get knocked off with regularity, pinpointing the changing relationship.

I stared down moodily at one particular target, watching the great brass ball swing closer and closer to it. I became fascinated, hypnotized by the inevitability of a collision: *this* swing. No. Then *surely* the next.

There was a round of applause and a great flashing of bulbs. I tore myself away from the magic and turned in time to see Anne march past with her mother's profile and determined stride. Rather attractive: rather pregnant; rather appealing.

I turned back to the pendulum and found that it had smeared my target. I knew that I should think of some aphorism about the inexorability of time and space and the stars in their courses. I couldn't think of anything so I simply said the hell with it and set off for my rotating office.

About a year ago, the people running "1876" over at the Arts and Industries Building opened up a time capsule from 1876 and read the reports of schoolchildren of a century ago, telling about what girls were like and what boys were like and what life was like. This column quoted some of their letters (Around the Mall, May 1976).

Now comes a letter from Mrs. Rena Kelly who got her fourth graders at Colgate Elementary School, Baltimore County, Maryland, to tell what these same sort of things are like today. I present three typical pieces: "A girl of 1977 is neat and clean. They sometimes wear their hair long and sometimes they put it up in a bun; Girls do not get in fights. They wear skirts, shirts, tennis shoes, dress shoes, sandals, slippers, dresses, knee-hi's, panty hose, pants, socks and all things like that. They sometimes scream when they see spiders and snakes. Girls today are nice and good. I like being a girl of today because they wear nice clothes like jumpsuits, and coats, and sweaters and all. I like being a girl today alot."

That was signed by Patricia, and I'm awfully glad she enjoys being a girl. As for the boys' side of it:

"All the boys are *cool*. Have fights in the bathroom and bother girls. And boys play baseball, football, basketball, and all girls do is *skate*. Boys think skating is sissy stuff. So do I. Boys today wear leather jackets, blue jeans and boots and ride motorcycles and go-carts.

"Boys have big dogs like Great Danes and Dublement-Pinchers."

Rodney provided that. Life in general is the province of Scott. Here's his effort:

"This paragraph is about pizza parlors. I love pizza very much. I eat a lot of pizza. It has cheese on it with meat sauce and dough. You cook it in a oven. The heat melts the cheese and it tastes good. That's how it is in 1977."

There's one thing that goes on in 1977 that's a lot less fattening than pizza and produces hardly any bathroom fights between boys or girls. And that is throwing the boomerang. Benjamin Ruhe,

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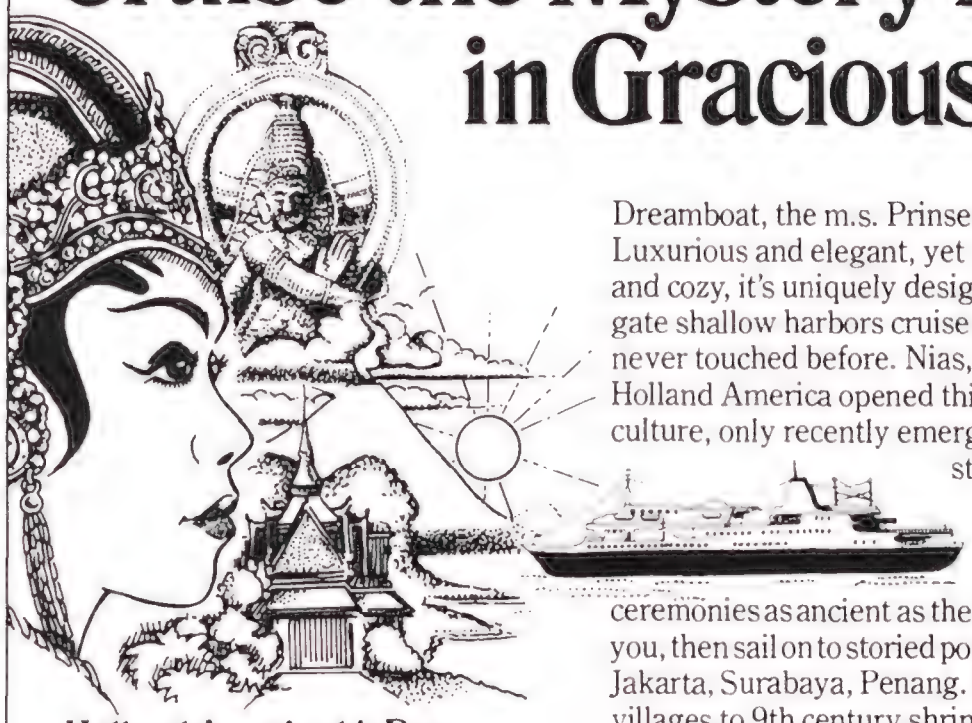

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formerly of the Smithsonian staff and now Public Affairs Officer for the National Archives, got the sport of boomerang hurling under way while he was with us, and it's been a summer feature in Washington ever since. Now Ben Ruhe has written a book, *Many Happy Returns* (Viking), which points out all the secrets of boomeranging. And this year, on a breezy June afternoon out at West Potomac Park, Ben was there to push his burgeoning sport.

So were a lot of other people with their 35-mm cameras and their 40-carat dogs (not a mutt in the lot). And they chucked boomerangs around and some of them were pretty good at it, and anyway, it was great fun.

That's what Ben says it ought to be. He describes in his book how you hold the device with its curved side facing you (if you're right-handed) and turn so that you throw to the right of any wind that might be blowing (calm air is best). Then you let her go with a great snap of the wrist to give it a good spin. It supposedly sails around in a broad circle, spinning vertically, then whishes over your head, turning horizontal, and then slides right back down at you. If you get really good, you can catch it.

Nothing to it, Ben says. If you're remotely athletic and well-coordinated, you can do it first time with no sweat.

Well, I tried it once. I'm not a jock, exactly, but I coordinate real good, as the jocks say, and I was sure I could master this strange curved half-rounded piece of hardwood (as someone said, looking like a flattened-out brown banana). I gripped, faced properly, drew back and heaved with a great wrist snap, and the boomerang went whishing right into the ground 12 feet in front of me.

—Edwards Park

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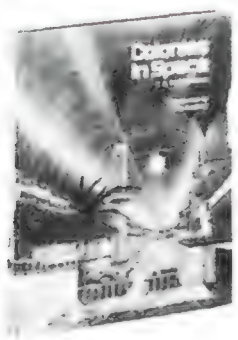

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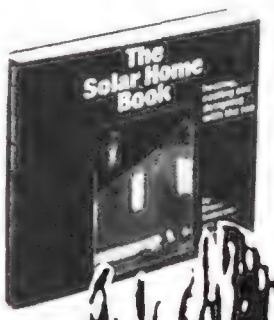

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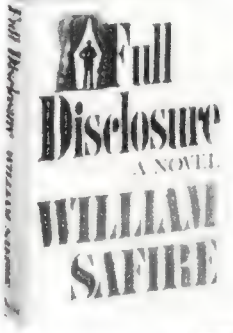

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Book reviews

The Path Between the Seas:
The Creation of the Panama Canal,
1870-1914
David McCullough
(Simon and Schuster, $14.95)

With two previous books, *The Johnstown Flood* and *The Great Bridge* (the story of the building of the Brooklyn Bridge, SMITHSONIAN, October 1972), David McCullough established himself as an outstanding chronicler of grand events in American history. He has now surpassed himself by writing *The Path Between the Seas,* an exhaustive and fascinating account of the Panama Canal and the age that produced it.

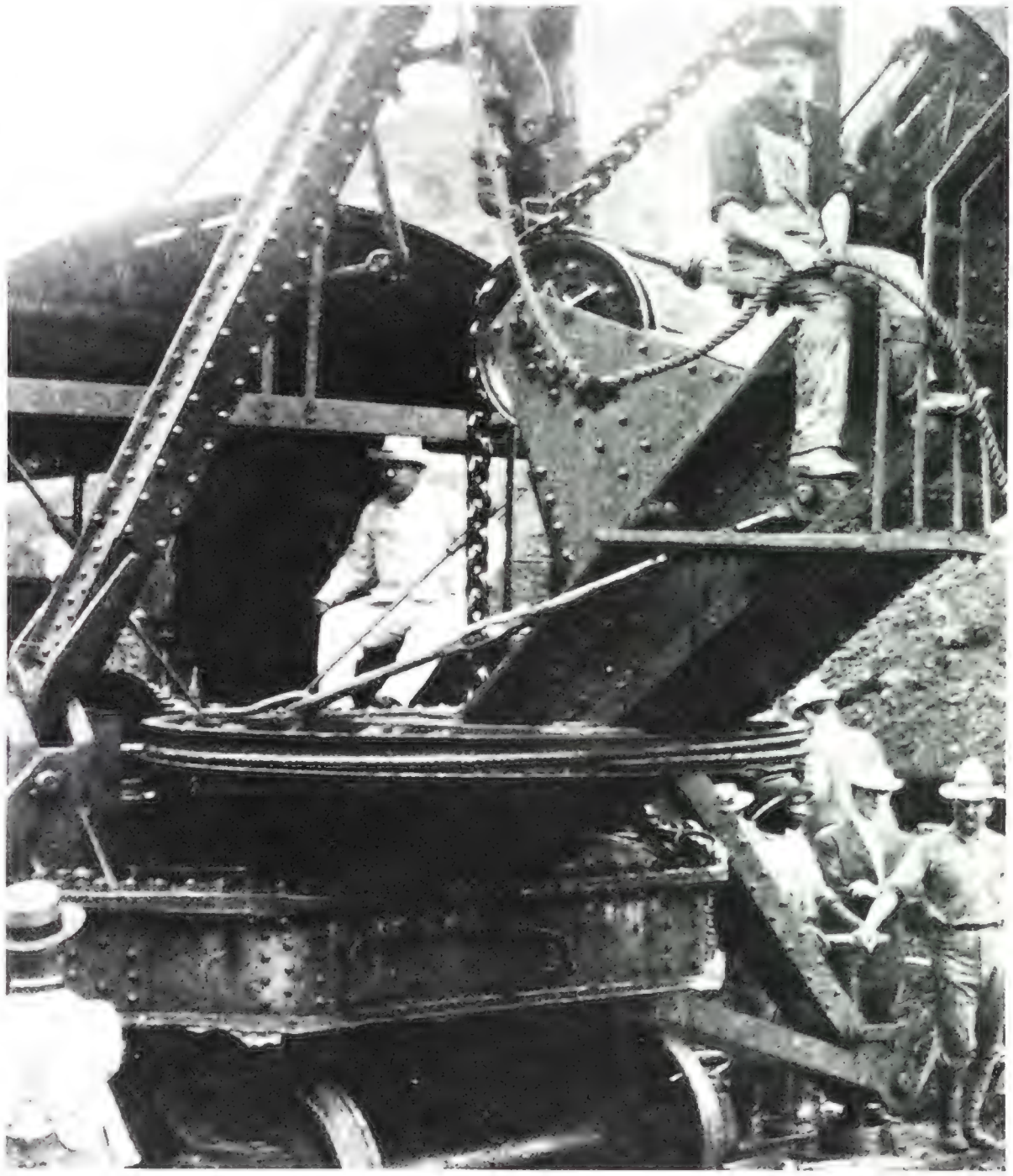
The canal's construction alone is an incredible tale. A "vast, unprecedented feat of engineering," it cost about $639 million and the lives of perhaps 25,000 workers. "If the United States were perfectly flat," writes McCullough, "the amount of digging required for a canal ten feet deep by fifty-five feet wide from coast to coast would be no greater than what was required at Panama within fifty miles."

Working conditions, first under the French and, later, the Americans, were abominable. "I have to dig . . . from five-thirty in the morning to six in the evening, under tropical sun and rain," wrote the painter Paul Gauguin, a common laborer on the canal. "At night I am devoured by mosquitoes." In the final years, about 50,000 men (most of them West Indian blacks) were cutting through the jungles and mountains of the Panamanian isthmus, contending with incessant rain, mud slides, and temperatures as high as 130 degrees.

Drawing on unpublished or long-ignored sources, and on interviews with 31 participants or their descendants, McCullough fills his pages with vivid detail about life and work "along the diggings." His real achievement, however, lies in his superb portraits of the French and American individuals responsible for the canal and of the age in which they lived. More than anything, by describing an epoch's greatest undertaking, the author gives us extraordinary insight into the hopes and values of another age.

The canal was begun in a time of boundless optimism and confidence, a time when there seemed no limit to what men could do. No one so embodied that 19th-century state of mind as Ferdinand de Lesseps, the charming, handsome and brilliantly persuasive Frenchman who, in 1870, had only recently built the Suez Canal and was now "openly casting about for new worlds to conquer." Settling upon the idea of a canal to link the oceans at Panama, he convinced thousands of Frenchmen to invest in his venture. "The canal will be made," was all de Lesseps had to say.

A decade later, the "Great Dream" had become a disaster. Considering the obstacles they faced, the French had made sufficient progress to win the later admiration of American engineers. Technically, the mistake had been de Lesseps' insistence on a sea-level rather than a lock canal. But more than that, there was his failure to study the isthmus properly, his refusal to listen to others and to admit the realities of the problems posed in Panama. (Warnings about Panama's unhealthy climate he called an "invention of our adversaries.")



Theodore Roosevelt at his ease at the controls of 95-ton Bucyrus shovel at Pedro Miguel.

Even frantic borrowing and the bribery of officials could not prevent bankruptcy, and soon the entire nation was in the throes of the "Panama Affair," replete with investigations and trials to unearth the culprits behind France's humiliation. McCullough hardly considers de Lesseps blameless for the debacle—the Frenchman was certainly involved in bribery and in making misleading and falsely optimistic statements—but he does stress that de Lesseps was no less a victim than others of his era's optimism. "He had the nonscientific, nontechnical man's faith that science and technology would 'find a way,'" McCullough writes. In the end, "his tragic folly had been to misjudge the momentum of progress: he had felt certain the machines, the medicines, whatever it took, would be ready in time and he was wrong."

It remained for the United States to complete the task. Under Theodore Roosevelt, who viewed the canal as the first step to American supremacy at sea, the American effort (which might have occured in Nicaragua but for five votes in the Senate) was marked by a revolution in Panama and the subsequent Hay-Bunau-Varilla Treaty, which would long remain a difficult, often bitter issue between the United States and Panama. Only now does there seem to be hope of an amicable solution.

Better equipment, better financing, and better application of medical science—including Walter Reed's vital discovery that yellow fever is transmitted by mosquito, knowledge indispensable to combatting the disease—were factors in the American success, says McCullough, who throughout this book makes rather complex aspects of engineering, medicine, finance, international politics and other topics intelligible to the general reader.

"The creation of a water passage across Panama was one of the supreme human achievements of all time," the author writes. "It is a work of civilization." This book gives eloquent testimony to that fact and is, in itself, no small achievement.
—Joseph Barbato
Free-lance writer and critic

Doctors Wanted: No Women Need Apply
Mary Roth Walsh
(Yale University Press, $15)

In a textbook on obstetrics published in 1847, Dr. Charles Meigs observed that

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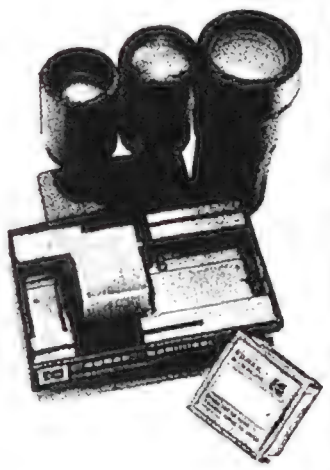

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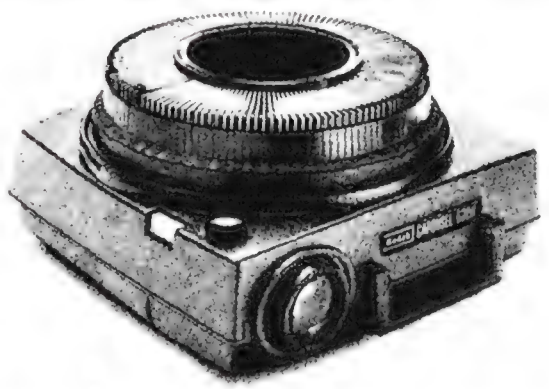

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woman "has a head almost too small for intellect but just big enough for love." And, asks Mary Roth Walsh, "who could trust the great questions of life or death to one whose equilibrium varied," in the words of an implacable critic, Dr. Horatio R. Storer of Harvard Medical School, " 'from month to month and week to week . . . up and down' "?

Storer claimed that he did not object to women physicians *per se*, for they would make "most agreeable and charming attendants [except during their menstrual cycles when] neither life nor limb submitted to them would be as safe as at other times."

It wasn't just fear of female biological inadequacy that made male physicians hostile to the idea of women doctors. According to the author, "Female patients made up a majority of a doctor's medical practice in the nineteenth century. One hesitated to even think of what would happen to the size of that practice if they all defected to their professionally trained sisters." This fear of female competition surfaced in many ways, as in this Scottish ditty:

An' when the leddies git degrees,
Depen' upon't there's nocht'll please
Till they hae got oor chairs an' fees
An' there's an en / o' you an' me.

In this fascinating book on women's struggles to become doctors and the steady and determined resistance they have met from the medical profession, Walsh, associate professor of psychology and American studies at the University of Lowell (Massachusetts), explores what she calls the "golden age" for women doctors in the latter part of the 19th century. Despite horrendous odds and stiff opposition, women made up 18.2 percent of the Boston medical profession in 1900.

Boston was the major battleground and, if there's a single villain in the record, it has to be the Harvard Medical School, which resisted admission of women with fierce determination despite support from individual doctors. In 1878 the Harvard Medical School was offered $10,000 by Marion Hovey of Boston to be used to educate women on equal terms with men at the medical school. A committee appointed to study the proposal approved, but the board of overseers rejected the Hovey offer.

After 1900, the strides women had made in entering and graduating from medical schools (other than Harvard) be-

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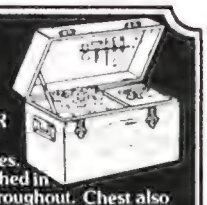

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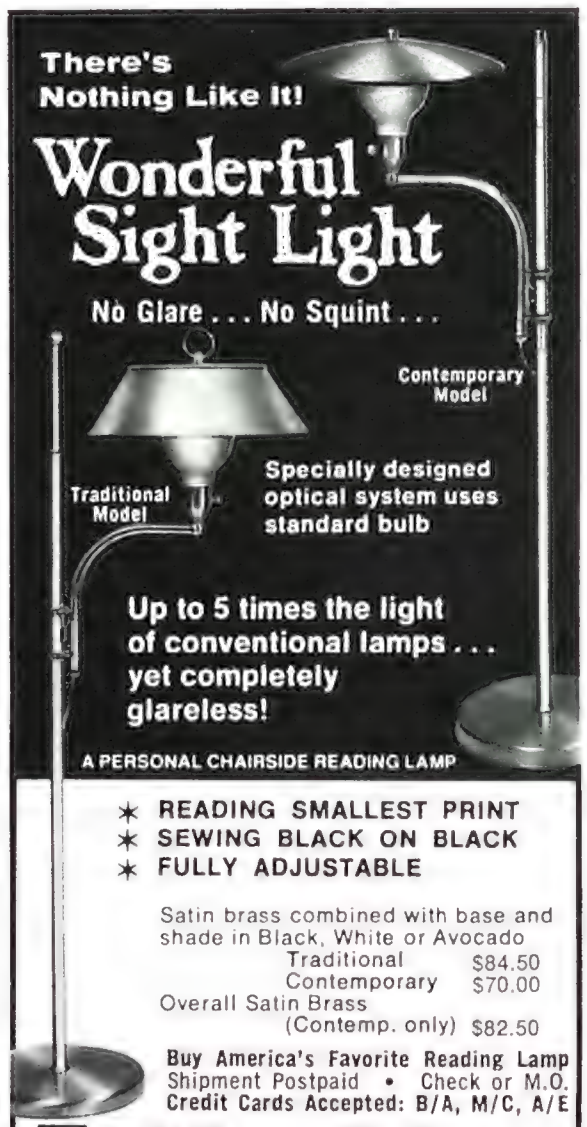
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gan to falter. Up to that time women were educated separately (separate but equal). Professor Walsh attributes the declining numbers to absorption of the women into coeducational medical institutions and the male anxiety it engendered. Citing the growth of Tufts Medical School as an example, she writes:

"Tufts, which began in 1893, expanded rapidly so that thirteen years later it was the largest medical school in New England and the seventh largest in the country as measured by the number of annual graduates. . . . But, in its opening years, when the future was uncertain, the school had accepted a large number of women so that in 1900, 42 percent of the graduating class was female."

As had happened at Boston University, the first coeducational medical college in the state, the women were too successful. Though in 1902 women constituted only 26 percent of Tufts' graduating class, they snared 60 percent of the honors. This achievement seems to have led to their undoing. The author notes: "A Tufts Medical School trustee admitted that the objections to coeducation did not lie in any failure on the part of the women: 'They have done their work well—too well if anything.' "

What happened in subsequent decades can be explained in a single word: quota. Women, like blacks and Jews, were subjected to the quota system at major medical schools. A decline in the number of medical schools intensified the pressures. Things haven't changed that much over the years. The nationwide percentage of women doctors in 1910 was 6.0, a high-water mark for decades. It wasn't until 1950 that the figure *rose* to that point again. And even today it is no more than 8.6 percent.

Central to Author Walsh's thesis is the opinion that history might repeat itself. Women doctors' golden moment was achieved because women, excluded from male medical schools, organized their own and worked together with the women's suffragist movement to achieve their goals. But they never attained the clout to position themselves on medical boards or exercise power in their profession. Today, says the author of this well-documented, detailed book, it is "again possible to be optimistic about the future of women in medicine." For one thing, a survey of American medical school deans predicted in 1975 that by the 1980s wom-

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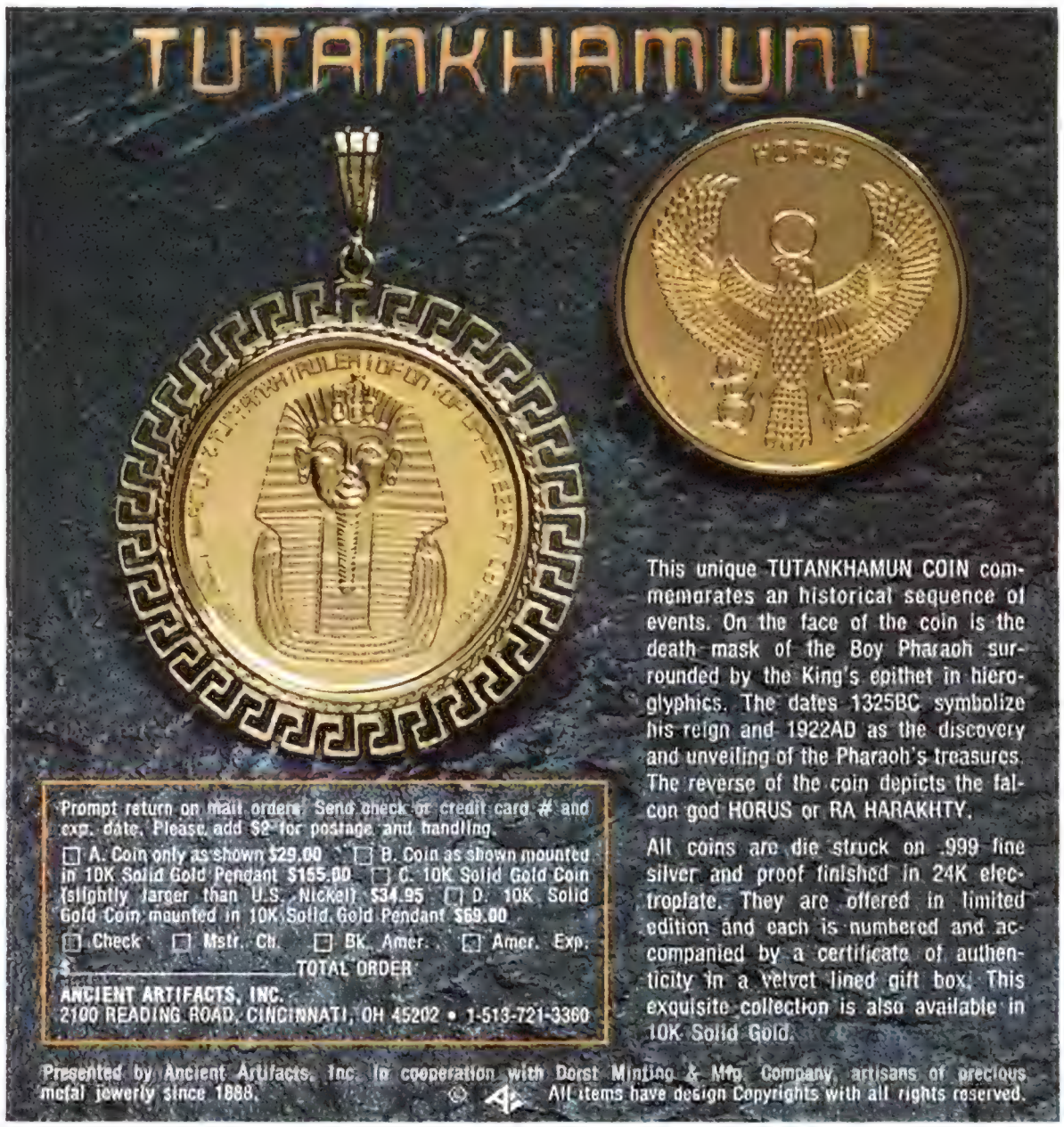

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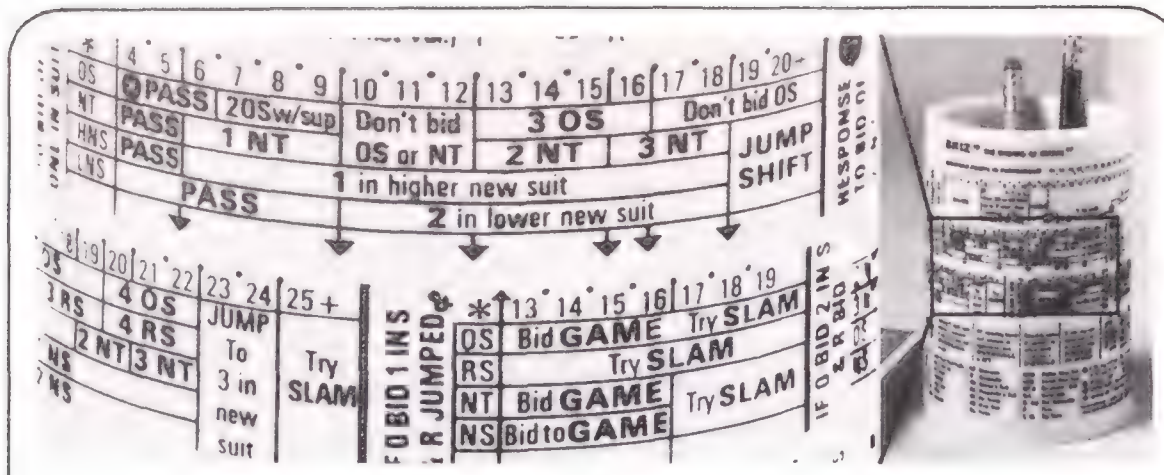

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en would account for one-third of the medical students and physicians in the United States. But she warns that another decline could set in unless women in medicine expand their power base and become part of the peer group shaping policy at the nation's medical schools and centers to which they rightfully belong. "Today . . . the number of female medical leaders has largely been unaltered. There are no women deans listed in the 1975-76 American Association of Medical Colleges directory. The few women who do hold administrative positions, about one percent, are concentrated in the student affairs offices, not in key policy-making positions."

This is an absorbing account of where women in medicine have been, how far they've come, and how they can keep from falling back.

—Patricia Brooks
Free-lance magazine writer

Wye Island
Boyd Gibbons
(The Johns Hopkins University Press for Resources for the Future, $10.95)

Boyd Gibbons prefaces his book *Wye Island* by saying he wants to explore "the connection between the ownership of land and the search for happiness." Not an easy task, despite Gibbons' credentials: lawyer, former deputy Under Secretary of Interior, and senior research associate at Resources for the Future, an environmental think tank. One might expect a book brimming with jargon—building moratoriums, rezoning hearings, easements, high-density clusters, and the like. Not so.

Gibbons has written an important book. He attacks the huge topic of land ownership by focusing on a sparsely settled, 2,800-acre island in Chesapeake Bay, just off Maryland's Eastern Shore.

In 1974, James W. Rouse ("overlord of Columbia [one of America's largest planned communities] and builder of huge shopping centers") unveiled his company's plan to build a community for 2,750 people on Wye Island. To do this, Rouse would have to convince the county to change zoning laws permitting only five-acre building lots.

Rouse, who had spent his boyhood near Wye Island and loves the Eastern Shore, intensely supports "quality" development—projects which take into ac-

count an area's culture and, more important, its environment.

After performing exhaustive studies of Wye Island's history and ecological systems, and after discarding 23 alternative development plans, Rouse's proposal included the following provisions: a tertiary sewage-treatment plant, a central village (containing most of the population) with a harbor, nearly 500 acres of woodland and marshes, and 800 acres of farmland. In addition, the land could not be resubdivided. Total cost: about $100 million.

But first he had to sell his case to the citizens of Queen Anne's County. This is where Gibbons is best, because *Wye Island* is primarily about *people:* clammers, crabbers, business executives, storekeepers, land speculators.

Besides talking to local citizens, Gibbons delves into the area's past and discovers a motley collection of characters: Judge John Beale Bordley, who began an experimental farm on Wye Island in 1770; Frederick Douglass, the black abolitionist and writer; Jacqueline and Glen Stewart, who bought most of the island, built an impregnable castle nearby and patrolled their land with hounds and armed horsemen; Dave Nichols, a "hustler of lots," who haphazardly subdivided huge chunks of nearby Kent Island.

Gibbons succeeds in portraying the fear shared by the local citizens—and by implication, most Americans—of change. More specifically, change that attracts "undesirable" newcomers—an adjective that covers up a certain amount of bigotry. One woman's lament sums up this feeling: "Rouse's village on Wye Island would mean a sewer system . . . a dual-lane highway . . . all those kids. . . . They'd all be Bethesda Jews—or Italians. They're the ones with money who can afford those lots."

Although Gibbons does award white hats to certain characters, and depicts others as scoundrels, he avoids making any overt judgment on the merits of the Rouse plan. He ends *Wye Island* by posing the dilemma that faces the residents of the Eastern Shore: "Pitted in opposition are two fundamental prerogatives that Americans rightly cherish: to keep one's neighborhood familiar and unchanging, and to improve one's life by moving on." A dilemma we all face, in all our neighborhoods.

—David Sleeper
Editor, The Conservation Foundation

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Plan Now For Fall, Winter And 1978

Russia*—October 3-17: Visit Leningrad, Tallinn and Moscow. View the opulence of the treasures and palaces of Czarist Russia and observe firsthand the accomplishments of the Soviet Union with tours of schools, factories and housing.

Sultans' Treasures*—October 10-24: An adventure tour to Istanbul and Asiatic Turkey featuring the royal treasury and collections at Topkapi Palace, the Blue Mosque, an evening in a Turkish home; Troy and Pergamum, an important Greek and Roman city near Ephesus, or central Anatolia and Cappadocia with its exciting rugged landscape, old caravansary and the unbelievable valley of underground houses and churches that was once the center of the Byzantine anchorite movement.

Mayan Mexico: The Yucatán Peninsula—January 6-18, January 28-February 9, November 10-22 or December 2-14, 1978: A complete tour of the extraordinary Mayan ruins of the Yucatán. Accompanied by an archaeologist, visit the sites of Chichén Itzá, Palenque, Uxmal Tulum, plus the seldom visited sites of Edzna, Kohunlich, Rio Bec and Cobá. Also includes a brief pause at Akumal on the Caribbean Sea. An adventure tour. (Originates in Merida).

Guatemala—February 9-19 or November 22-December 2, 1978: In the company of an archaeologist, visit Tikal, the monumental Mayan City of the Petén jungle, Copán, a Mayan site deep in the mountains of Honduras, plus the Mayan ruins of Quiriguá, El Baúl and La Democracia. Travel to the Guatemalan Highlands to visit Lake Atitlán and Antigua—the Spanish colonial capital preserved in its 17th- and 18th-century splendor. Also visit Chichicastenango with its ancient market and Indian rituals. Guatemala is a must for Mayan archaeology and Indian textiles. An adventure tour. (Originates in Guatemala City).

Kenya, East Africa—February 2-19: Wildlife and Tribal life adventure providing modern African insight—and the "Africa that used to be," in the old safari tradition. Seminars in Nairobi and in the field —Masai Mara; Samburu; Tsavo.

Low cost of tours includes first-class hotels, most meals, sightseeing, lectures, theater tickets and air fare. * Optional predeparture course will be available.

Additional reading

Beaubourg (p. 20)

"The Cultural Colossus of Beaubourg" by Mary Blume, *ARTnews,* March 1977

"A $200-Million Erector Set" by Anthony Burgess, *New York Times Magazine,* January 23, 1977

"Le Tour Babel" by Nathan Silver, *Harper's,* April 1977

Coal (p. 30)

Energy: Global Prospects 1985-2000 by Carroll L. Wilson, McGraw-Hill, Inc., 1977

Energy, Earth and Everyone by Medard Gabel, Straight Arrow Books (San Francisco), 1975

My Land is Dying by Harry M. Caudill, E. P. Dutton & Co., Inc., 1971

National Energy Outlook, by the Federal Energy Administration (Washington, D.C.), 1976

Expatriates (p. 38)

The Pope's Back Yard by Curtis Pepper, Farrar, Straus & Giroux, Inc., 1977

The House of Life by Mario Praz, Oxford University Press, 1967

Speaking the Language Like a Native by Aubrey Menen, Hamilton (London), 1963

Companion Guide to Rome by Georgina Masson, Charles Scribner's Sons, 1975

Roller coasters (p. 44)

The Great American Amusement Parks by Gary Kyriazi, Citadel Press, 1976

The Outdoor Amusement Industry by William F. Mangels, Vantage Press, 1952

World's Fair Midways by Edo McCullough, Exposition Press, 1966

Goodbye, Coney Island, Goodbye by Paul Ilyinsky and Dick Perry, Prentice-Hall, Inc., 1972

African village (p. 55)

"A Brilliance in the Bush" by Mary Cable, *Horizon,* November 1960

Mathew Brady (p. 58)

"Mathew B. Brady's Photographic Gallery in Washington" by Josephine Cobb, *Records of The Columbia Historical Society* (1953-56)

Mathew Brady Portfolio of Eminent Americans, National Archives Trust Fund Board, General Services Administration, 1977

Mr. Lincoln's Camera Man, Mathew B. Brady by Roy Meredith, Dover Publications, Inc., 1974

The History of Photography from 1839 to the Present Day by Beaumont Newhall, The Museum of Modern Art, 1949

Admiral Beaufort (p. 68)

Karamania by Francis Beaufort, R. Hunter (London), 1818

The Admiralty Chart by Rear Admiral G. S. Ritchie, Hollis & Carter (London), 1967

Memoirs of Hydrography by L. S. Dawson, Cornmarket Press (London), 1885, republished 1969

The Admiralty Hydrographic Service by Vice-Admiral Sir Archibald Day, Her Majesty's Stationery Office (London), 1967

Scientists and the Sea by Margaret Deacon, Academic Press (London and New York), 1971

Woodrow Wilson Center (p. 76)

Big Story by Peter Braestrup, Westview Press, Inc. (Boulder), 1977

The Presidency in Flux by George E. Reedy, Columbia University Press, 1973

The Politics of Lying by David Wise, Random House, Inc., 1973

Foxes (p. 85)

The Smut Peddlers by James J. Kilpatrick, Greenwood Press, Inc., (Westport, Connecticut), 1973

The Sovereign States by James J. Kilpatrick, Henry Regnery Company (Chicago), 1957

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Smithsonian highlights

National Air and Space Museum
In celebration of its first anniversary of operation, NASM has permanently reduced by half the fees for its two popular shows. *To Fly*, shown at 45-minute intervals every day beginning at 10:30 A.M. in the theater, and *Cosmic Awakening*, shown daily at 45-minute intervals beginning at noon in the Spacearium now will cost 50 cents each for adults and 25 cents for children.

The August Sky Lecture, "Our Island Universe—the Milky Way" will be given August 20, 9 A.M., in the Albert Einstein Spacearium. For free tickets call 381-4193.

Museum of History and Technology
"Focusing on America" takes a good look at our northern and southern hemisphere through the eyes of a map maker. The exhibition begins with maps drawn well before Columbus' time, which show the world without the Americas, and gradually progresses through a history of geographical discovery. Early surveying equipment is included—opening August 7.

Museum of Natural History
"Condemned Rivers of the Mother Lode" presents California river photography organized by the Friends of the River—through September 18.

Hirshhorn Museum and Sculpture Garden
The Hirshhorn is presenting a special installation of works from its collection by Arthur B. Carles, an American colorist painter of the Twenties and Thirties—August 18—October 9.

"The Thomas Eakins Collection" continues through September 5.

Renwick Gallery
"Grass" illustrates the way in which the world's grasses are transformed into useful and decorative objects. Included in the exhibition are a 12th-century Peruvian basket, a Japanese raincoat, Swiss lace, an Amazon mating dance dress, a Zulu beer strainer—August 5-February 20.

National Portrait Gallery
"We Were But a Handful" pictures the women's suffrage movement during efforts to pass the 19th Amendment. The mixed-media show includes paintings and photographs, opening August 26.

Cooper-Hewitt Museum
August in New York includes two intriguing architectural exhibitions at the Cooper-Hewitt: "Palladio" continues with models of Andrea Palladio's villas and public buildings, and "Palaces for the People," an exhibit of resort and motel architecture in America.

Note: The Cooper-Hewitt will present a seven-part course on "Collectibles" during August. For information call (212) 860-6868.

Contributing Memberships
Contributing Members of the Smithsonian Associates support the Institution's work in education, research and scholarship. There are three categories of membership: supporting at $50, donor at $100, and sustaining at $500. Among the special privileges offered to contributing members are:

- illustrated exhibition publications by Smithsonian scholars
- invitations to selected previews of major exhibitions
- the annual report from the Secretary of the Smithsonian

For information write Contributing Membership Program, Smithsonian Institution, Washington, D.C. 20560.

Smithsonian Institution Traveling Exhibition Service
"Tunisian Mosaics" continues at the Bowers Memorial Museum in Santa Ana, California, through August 14 (mosaics dating from second century B.C.).

The many interests of the Smithsonian

Institution are reflected in every part of the country through the circulating shows. To find out how to bring an exhibit to your area, write: Smithsonian Institution Traveling Exhibition Service, Washington, D.C. 20560.

Current SITES shows include:

- Tuscaloosa, Alabama—"Edvard Munch: The Major Graphics," University of Alabama Gallery, August 13-September 11.
- Logan, Kansas—"The Dream of America: Swedish Emigration to the United States," the Dane G. Hansen Memorial Museum, August 6-September 11.
- Boston, Massachusetts—"James Weldon Johnson" remembers the life of the Broadway musical composer who wrote the Negro National Anthem and who also participated in the "Harlem Renaissance"—August 13-September 11.
- University Park, Pennsylvania—"Arne Jacobsen: Danish Architect and Designer," College of Arts and Architecture, August 13-September 25.
- San Antonio, Texas—"Witness to our Times: Photographs by Alfred Eisenstaedt," offers a glimpse at the career of a *Life* magazine photographer considered the pioneer of photojournalism, Frost National Bank, through August 28.
- "America's First Ladies" can be seen in Newark, Delaware, at the University of Delaware Student Center, August 6-September 4; in Detroit, Michigan, at Trizec Developments, Inc., August 6-September 4; and in Rome, New York, at the Rome Art and Community Center, August 6-September 4.
- Little Rock, Arkansas—"Photographing the Frontier" offers a treasure of unpublished photographs of frontier life around the turn of the century, Worthen Bank and Trust Company, August 13-September 11.
- Fort Wayne, Indiana—"Know What You See" focuses on the art conservator's techniques for examining paintings, August 13-September 11.

When Associates visit Washington

Upon arrival at the Smithsonian, members are invited to register at the Associates Reception Desk in the Smithsonian castle on the Mall. Here, from 10 A.M. to 4 P.M. daily, a special orientation and printed materials are available.

Associates planning a trip to the Smithsonian may send a postcard or call for an information packet: Associates Reception Center, Smithsonian Institution, Washington, D.C. 20560; call (202) 381-6264.

If you have misplaced your membership card, the Associate receptionist in the castle will issue a replacement upon presentation of your Smithsonian magazine address label.

Special summer membership benefit

Associates now may enjoy daily breakfast service, as well as luncheon and dinner, in the members' dining room. "The Court," in the Museum of Natural History.

Breakfast features include a range of traditional fare, plus such special taste treats as cheese-filled crêpes with strawberry topping. For adults $2.95, children $1.95. No reservations.

Early morning admittance by Associate card via Constitution Avenue entrance only—breakfast, 8:30 to 10 A.M.; luncheon, 11 A.M. to 3 P.M.; dinner from 4:30 to 7 P.M.

Summer Museum Hours

Most museums on the Mall—Arts and Industries, Hirshhorn, Air and Space, Natural History, History and Technology, and the Smithsonian castle—are open daily 10 A.M. to 9 P.M. Evening hours will be discontinued after Labor Day.

Parking for Visitors

Street parking near the Smithsonian complex is difficult. Use of public transportation is recommended. The Air and Space garage, 7th Street and Independence Avenue, S.W., is open daily from 7 A.M. to 10 P.M. Recreational vehicles higher than seven feet are prohibited from garage parking.

The new Smithsonian station of the Metro subway system links the Maryland and Virginia suburbs with the museum complex, as does the more extensive Metro bus system. Free parking lots are located at strategic points on the outskirts of the metropolitan areas for tourists and commuters. Information is available from the Associates Reception Center at the address above.

The Double-Decker shuttle service

Attractive English double-decker buses provide free, fast transportation from the Museum of History and Technology to the National Collection of Fine Arts and National Portrait Gallery at 9th and H Streets, N.W.

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By Mary Hamman

Cast your car in the pond and reap fish

When you have dug a pond and it holds water (there is no scientific certainty that it will), it is time to stock it. For our one-and-a-half-acre pond with water temperature of 70 degrees in the summer, we needed 1,500 bluegills that fall and 150 bass the next spring. You are told to bring buckets of your own pond water to the county seat on a particular date—so the fish can become acclimated to their new environment on the drive home, I guess.

Fifteen hundred fish sounded like a lot of fish, so we filled two galvanized garbage cans and two plastic pails with pond water and stashed them in the car where they sloshed water all over the floor and seat on the drive to the county courthouse.

There a tank truck was waiting to dispense fish. We hauled out our containers and dragged them to the truck. A man handed us a small can full of microscopic life. "That's 1,500 bluegills?" we asked. "Yes, Ma'am," he said. "Did you count them?" we asked incredulously. "No, Ma'am, we weigh them." There wasn't much more to say. The county was giving them free, at that time, to pond owners.

We put the bluegills in one bucket, emptied the superfluous containers and took our minuscule haul back to the pond. In the spring, we toted only one small pail of water to pick up the 150 bass. By summertime the pond was supposedly ripe for fishing. Equipped with new rods and reels and lures with movable eyes and feathers, we cast until our shoulders ached but caught no fish. Worms and small frogs didn't help. Fisherfolk guests with Abercrombie & Fitch equipment fared no better. One asked, "Are these large- or smallmouth bass?" Another answered, "No-mouth bass, a new species! Indigenous to this pond!"

Down the road three men had a camp. Only one, Tom, had ever introduced himself. So we called them Tom, Dick and Harry. One day they came over wanting to fish. "Sure," we said, "go ahead." They caught five edible bass each. They let us take their pictures, and ours, with the fish but didn't offer us any. For a couple of years Tom, Dick and Harry were the only ones who caught and ate our fish.

Then things began to pick up. One of us caught a 4½ pound bass—a whale!—and we actually got to taste our own fish. After that all of us, even four-year-old kids, caught sunfish, hideous whiskered catfish (their eggs brought in on the feet of ducks) and lots of respectable bass. Our pond was doing fine.

Until last summer. Suddenly no one could catch anything. We called the county agent. He suggested we paint a No. 2 can white and attach it to a broomstick. If we could see it submerged 18 inches under the surface of the water, the pond needed fertilizer. We couldn't see it. "Perhaps," the agent said, "your pond is static." Among other horrors this means your fish have stopped growing and for esoteric reasons won't bite.

The following Saturday we decided to get some home-cured hams. We told 12-year-old Mark Heidelberger, our farmhand who was shooting peaches with a slingshot, what other useful chores he could do while we were gone.

On the way I asked, "Did we leave the keys in the Ford?" That's the old, cut-down car that pulls our gang mowers.

"Probably" was the answer. "Why ask?"

"Mark is dying to drive that car," I said. "I wish we had the keys with us."

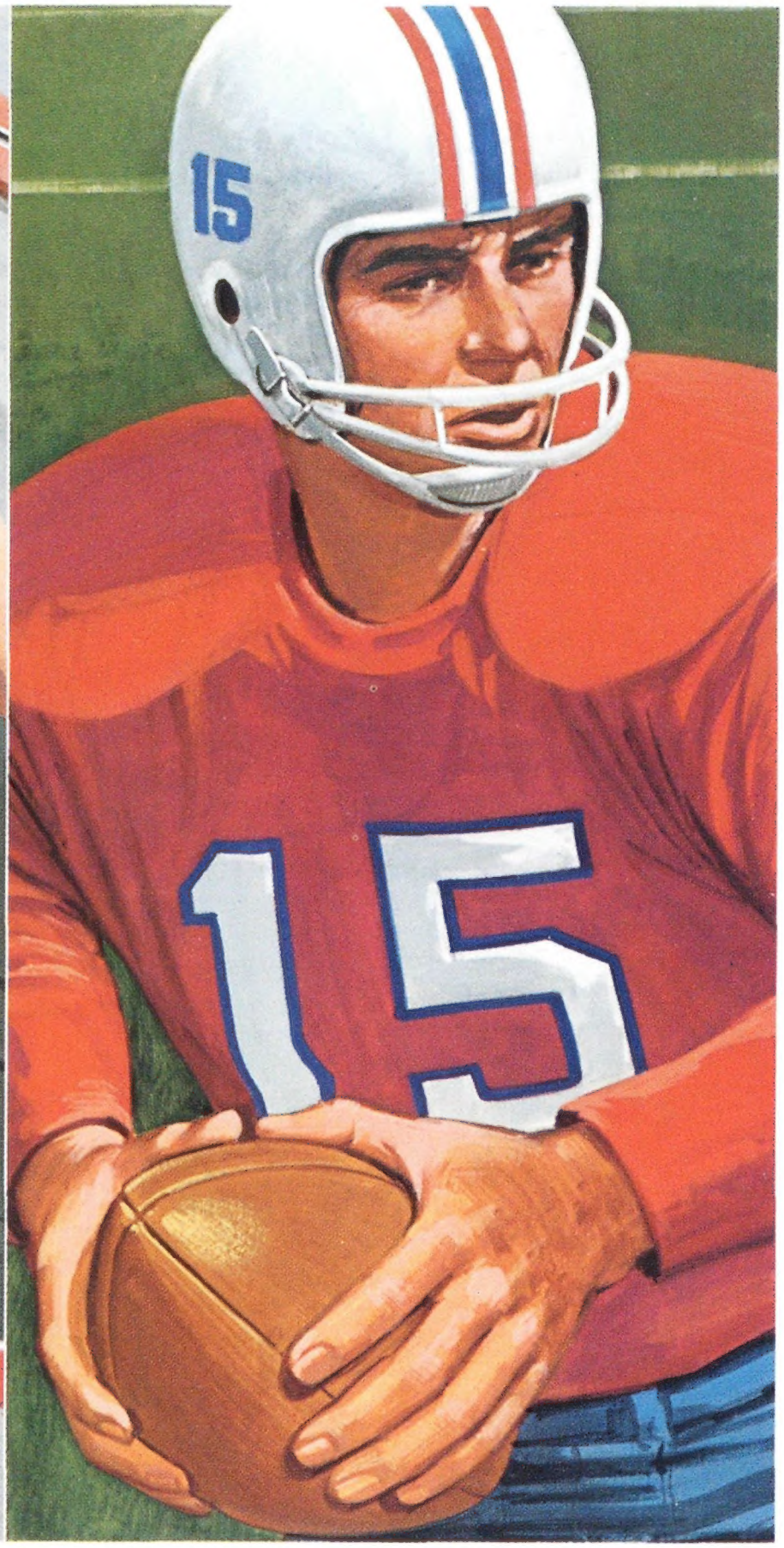
When we returned home, a weird sight greeted us at the pond. We dropped our packages and ran. The hind wheels of the Ford were stuck in the muddy bank; the whole front of the car was submerged. "My God! Mark did drive the car and he's in there dead!" Owing to the splendid fertility of the pond, we couldn't see but found the windows open and no corpse.

We called his family. Mark was home, uninjured. He had confessed. Dripping wet, what else could he do? "I'm glad he didn't drown," I said, not sounding too glad. "We'll be over to help," Mr. Heidelberger said.

Jack Billetdoux, a man with a tow truck with a winch, came to get the car out of the water. It took a while to haul it up the bank and onto the lawn. As the water flowed out of the car, so did fish. We all began falling on them on the banks and grass as they plunged and flipped back toward the water. Sprawled out flat, clutching two bass, I saw a fellow standing by with a rod—the county agent, come betimes for once. "Ah," he said, "this isn't the way I'd do it. Now I'll give her an orthodox survey."

We filled the freezer with fish and the agent declared the pond in good health. It's not the kind of incident that country people let city people forget. Strangers call and tell us about dumps where we can get junk cars—perfect bass bait—free. Someone put an ad in the county paper: "Old cars. . . . Drop one in your pond, haul in a ton of fish." We may move.

Is the best defense a good offense?



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The engine to which the CIS fuel-injection system is wedded is the famous 6-cylinder Mercedes-Benz double-overhead camshaft power plant. The double-overhead camshaft configuration provides smoother engine operation at all speeds and eliminates the need for pushrods and lifters.

Suspense-free suspension

The advanced front suspension system of the 280SE derives from the famous C-111 high-speed research vehicle. It has many advantages: Extremely precise steering control with instant response, almost no tilting of the car in cornering and braking, straight-line control under heavy braking and rough road conditions, and better road-holding ability under all conditions.

Matched to the remarkable fully independent front suspension is a fully independent rear suspension that does its share in creating the 280SE's incomparable roadability. It helps eliminate the suspense you may have experienced in rigid-axle cars.

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